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## THE HEALTH SYSTEM AND THE MEDICAL PROFESSION IN DENMARK

By K. H. BACKER

The Danish Medical Association welcomes this opportunity of giving the numerous visitors from far and near to the 12th General Assembly of the World Medical Association a brief orientation concerning the structure of the Danish Health System.

The subject of "general hygiene" (control of food, drinking water, dwellings, etc.) will not be dealt with here but a description will be given of the organisation of treatment of disease and the prophylactic measures directed towards the individual or family.

As a preliminary, mention will be made of the education of doctors and specialists in this country.

## EDUCATION OF DOCTORS IN DENMARK

Primary and secondary school education are, practically speaking, free of charge and admission to medical studies is open to all who have passed "studentereksamen" (General Certificate of Education). There are no restrictions of any sort associated with the commencement of studies.

University education of doctors takes place in the national universities in Copenhagen and Aarhus. According to the programme of studies which was recently revised, the course takes at least 6½—7 years. Medical students are on an average 19 years of age when they commence studies at the university at the conclusion of their school education. 2½—3 years are devoted to the pre-clinical subjects (physics, chemistry, anatomy, genetics with statistics, physiology, and biochemistry). This part of the course terminates with an examination known as Part I. The subsequent 4 years are devoted to teaching in clinical and pathological subjects and practical clinical education and, similarly, terminate with an examination known as Part II.

Only a minority of the medical students complete the course according to plan. The previous

programme of studies counted also upon 6½—7 years of study but the actual average period of study was at least 8 years, and even since the introduction of the new programme of studies rather few students can expect to complete the course in a significantly shorter time.

The final professional examination does not directly give *unlimited* right to practise medicine. The right to run an *independent* practice is not obtained until after one year of hospital practice, six months as house surgeon and six months as house physician.

The State, through the National Health Service, issues the necessary authority to the doctor to practice on completion of his education. The authority to practice as and be recognized as a specialist requires further education, the extent of which is determined by the State. The authorization as a specialist is issued by the Ministry of Internal Affairs on the recommendation of the National Health Service, which in accordance with the Medical Legislation has first taken counsel with a committee in which the medical scientific societies are strongly represented.

The education of specialists takes on an average seven to eight years. The authority to practise as a specialist does not depend upon any examination but upon the fact that the candidate has occupied required positions during the set time. (In the competition to obtain these positions a certain "selection" takes place).

The doctor in general practice has a considerably longer period of education than the first year of hospital practice. Practice is not, as a rule commenced until after 3—4 years hospital residency.

## MAIN OUTLINES OF THE DANISH HEALTH SYSTEM

The *Danish Health System* cannot be regarded nor evaluated as a system which came into being in this century in its completed form. It has developed by the union of various forms of initiative which arose during the past 150 years and which

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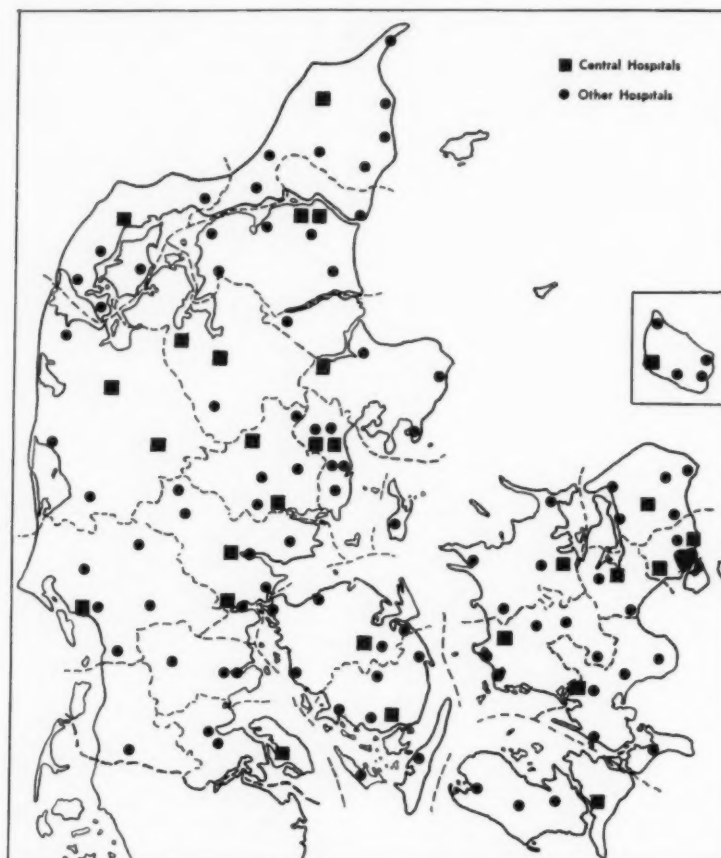


Fig. 1. Distribution of Public General Hospitals in Denmark.

at the commencement were independent of one another both administratively and economically—and to a certain degree have remained so.

Two main "systems" have developed: 1) the hospital system which is financed mainly by means of taxation and has a full-time staff employing half of the total number of doctors, and 2) the field of the general practitioners and specialists outside hospitals which is mainly financed by the arrangements for health insurance.

For convenience these two "systems" will be termed the nosocomial and the extranosocomial systems, respectively.

Administratively and economically these two systems have been quite sharply delimited and they are also still under the jurisdiction of different ministries, the Ministry for Internal Affairs and the Ministry for Social Affairs. With the lapse of time, however, they have become integrated despite the practical difficulties which are implied by a long series of years of independent development, separate administration and financing.

#### THE ORGANIZATION OF HOSPITALS IN DENMARK

Hospitals in Denmark are public and include City Hospitals, County Hospitals, State Hospitals and Special Hospitals. Some of the group last mentioned function as Rehabilitation Centres for certain groups of diseases.

City Hospitals are run by the communities, County Hospitals by the counties, State Hospitals by the State (Government) while the Special Hospitals are run by the State or by private societies subsidized by the State.

City and County Hospitals may either be "Central Hospitals" with a series of special departments, or smaller hospitals with medical, surgical, and radiological departments, mainly designed for surgical patients. These smaller hospitals are either City Hospitals for the smaller towns or they are included as links in the county hospital administration in addition to the central hospital or hospitals.

Within towns and counties co-operation exists and a certain subdivision occurs as regards the dominating subspecialties.

The State runs two extensive central hospitals of which the one, Rigshospitalet in Copenhagen, functions as the University Hospital.

In the other university town, Aarhus, the large City Hospital functions as the University Hospital. These two University Hospitals which are centres for research and teaching are specialized to a high degree.

Mental Hospitals are, similarly, run by the State.

A number of special hospitals were founded on a private basis and still have a special administration which is formally independent of the State. As the State, however, contributes considerable sums to the extension and upkeep of these hospitals it therefore demands control with their administration. These special hospitals must, therefore, in many respects be regarded as State Hospitals. This is particularly true for Sanatoria for Tuberculosis, Cancer Hospitals, and Orthopaedic Hospitals run by the *Society and Homes for Cripples*.

#### *The Development of the Hospital Organization.*

Public authorities took the initiative towards the development of a *generalized* hospital system so early that there was never much opportunity for private enterprise in this field. At a certain period, "private hospitals" were instituted here and there in the country by various religious bodies, Catholic in particular, but the public hospital organization has, in the course of time, successfully competed with these and also with private clinics run by doctors. Table 1 shows the number of medical-surgical hospitals from 1890—1956. Table 2 shows the status today as regards the beds available in public general hospitals, private hospitals and clinics, mental hospitals, and hospitals and sanatoria for tuberculosis. Table 3 serves to illustrate the requirements for beds for the treatment of tuberculosis and the table shows the occurrence of tuberculosis in Den-

Table 1.  
*Number of Beds in Public and Private Medical and Surgical Hospitals 1890—1956.*

	Total	Per 100,000 Inhabitants	Average Period of Hospitalization
1890	4979	2.3	30 à 40
1900	7616	3.1	
1910	10599	3.9	
1920	13774	4.2	
1930	16691	4.7	33
1935	20803	5.6	28
1940	22532	5.9	25
1945	23838	5.9	20
1950	24106	5.6	19
1955	24935	5.6	18
1956	25016	5.6	18

mark. Figure 1 shows the geographical distribution of central hospitals and other hospitals.

In 1806, the absolute monarch, Frederik VI, took the initiative in the development of the public hospital organization in Denmark by means of a "Royal Decree", imposing the obligation on the local authorities all over the country to provide proper hospital facilities in their respective domains.

For the understanding of what is meant by "local authorities" it should be explained that, for the purpose of administration, Denmark is divided into 22 counties each of which comprises a number of rural and small urban communities. These administrative units are self-governing to quite a great extent. The capital and the county boroughs are, similarly, self-governing, and are independent in relation to the county in which they are situated.

At the commencement the hospitals were not utilized to any great extent by the wealthier members of the population, as medical treatment at that time could be undertaken in the home more easily than today, but conditions have gradually changed. Public hospitals became the places

Table 2.  
*Number of Hospital Beds on Dec. 31, 1956. All Denmark.*

	Number of Hospitals	Number of Beds	
		Total	Per 1000 Inhabitants
Public Hospitals .....	124	23318	5.2
(Including 5 Hospitals for Tuberculosis and 12 wards)	—	922	0.2)
Private Hospitals receiving Subsidies .....	7	1230	0.03
(Including 2 Orthopaedic Hospitals)	—	310	0.07)
Other Private Hospital .....	14	1390	0.3
(Including 4 Orthopaedic wards)	—	137	0.03)
Private Clinics run by Doctors .....	16	338	0.1
Mental Hospitals .....	10	9249 <sup>1)</sup>	2.1
(Including 1 Private Mental Hospitals)	—	149	0.03)
Sanatoria for Tuberculosis .....	10	1387	0.3
Other Institutions for Treatment of Tuberculosis ....	28	1266	0.3

<sup>1)</sup> In addition, patients boarded-out with families per Dec. 31, 1956 .....

974 0.2

Table 3.  
Incidence of Tuberculosis in Denmark.

	Newly Notified Cases of Tuberculosis		Deaths					
	Total	Per 100,000 Inhabitants	Pulmonary Tuberculosis		Other Forms of Tuberculosis		Tuberculosis	
			Total	Per 100,000 Inhabitants	Total	Per 100,000 Inhabitants	Total	Per 100,000 Inhabitants
1921 .....	5318	162	2364	72	802	24	3166	96
1930 .....	3889	110	1899	54	603	17	2502	71
1940 .....	2687	70	1121	29	236	6	1357	35
1950 .....	2514	59	505	12	83	2	588	14
1956 .....	1128	25	191	4	36	1	227	5
1957 .....	—	—	170	3.8	33	0.7	203	4.5

where all the population, both rich and poor, could be treated for illness which could not be treated at home.

When this is compared with the fact that public hospitals have only very few private rooms a good impression is obtained of the social equalisation between "rich" and "poor" in Denmark at the present day.

In 1757 the first really large hospital was built in Copenhagen and was then intended as a hospital for the poor. The hospital, *Royal Frederiks Hospital*, became the first teaching hospital and functioned as such until 1910, when it was replaced by *Rigshospitalet*. The beautiful old hospital building still remains between Bredgade and Amaliegade just north of Amalienborg Castle Square.

The decree issued by *Frederik VI* regarding the establishment of the hospital organization was not the only action of far-reaching significance which this much respected monarch carried out in the interests of the health service. He passed the first law concerning the combat of epidemic diseases (1782), which still holds in principle: compulsory notification, isolation, and compulsory but free treatment. In 1790 laws were passed concerning the compulsory but free treatment of syphilis, which in principle still hold good. In 1804 a quarantine law was passed and in 1805 and 1810 decrees concerning vaccination against small-pox which, in effect, made vaccination compulsory and this has remained so since.

In 1807 the State inaugurated The Royal Institute for Deaf-Mutes and in 1811 The Royal Institute for the Blind was inaugurated by private initiative but with the support of the State. The motivation for the initiative shown by the State in this field was that blind and deaf-mute persons were to a particularly great extent deprived of opportunities to support themselves by their own work, and it was considered that the circumstances should be ameliorated in some way other than by Poor Law assistance which was, at that time, the only form of public assistance. It was obvious that the problem, presented by these persons could not be solved by medical treatment alone. An attempt had to be made to give the blind and deaf-mute children the same school education as

other children (the Danish primary schools with compulsory teaching were established in 1814), they should be enabled to contact other people, and attempts should be made to teach them to earn a living. Tasks such as these could not be solved by the hospital authorities but demanded special institutions.

Both of these institutions still function according to these principles. Today a more suitable name would be "Rehabilitation Centres" for the blind and deaf.

In the course of the 19th century similar institutions were established for other groups of disabling diseases. This occurred for mental defectives in 1852, for "cripples and infirm" in 1872, for epileptics in 1897, for those with defects of speech in 1898, later for other isolated groups of diseases and, finally, for those affected with poliomyelitis in 1954. With regard to these disease groups a combination of medical care and vocational rehabilitation is involved so that these institutions also may be regarded as "Rehabilitation Centres" in the modern sense.

The legal paragraphs which ensure treatment and education for disabled persons within the above mentioned fields, contain a very important clause concerning the duty of doctors and leaders of schools to report such cases to the local authorities, who shall then arrange for their care.

#### *The Significance of the Organization of Public Hospitals for the Work of the Medical Profession.*

It is obvious that it is of considerable significance for the medical profession of a country when the hospital organization, practically speaking from its commencement, is organized as a public institution and all forms of private initiative of note in this field are excluded. This leads inevitably to the fact that doctors working in hospitals become civil servants with regular salaries, and the medical profession becomes divided into two groups: those working in hospitals and those in practice. This has actually taken place during the first stage if frequently occurred that the doctors living in the vicinity could treat or participate in the treatment of their patients when these were admitted to hospital, but soon



afterwards one of these doctors would become appointed as "hospital physician". Even at this stage of development the general practitioners could be summoned as "assistant physicians", should the occasion demand, but the "hospital physicians" soon obtained full-time assistant physicians, and thereafter general practitioners have had nothing to do with the hospitals unless they wish to visit their patients privately. This conclusion was arrived at long ago — long before the word "socialized" was coined. It occurred while the government was steadily and uncontestedly in very conservative hands. The number of doctors holding full-time hospital appointments in Danish Hospitals during the years 1930, 1945 and 1956 appears from Table 4.

Table 4.  
*Doctors Holding Hospital Appointments  
(General Hospitals).*

	Senior	Others	Total
1930 .....	190	350	540
1945 .....	314	1032	1346
1956 .....	438	1501	1939

In Denmark, the conception of the "freedom" of the medical profession is slightly different from that in many other countries. This may be due to the fact that for over 100 years hospital treatment has been undertaken by doctors appointed as civil servants and who received no direct payment from the individual patients. It is possible to get used to things, and the development which medical care has undergone apace with scientific development, and the spirit which pervades the work, have made us in Denmark take these working conditions for granted. Though it must be admitted that the personal relationship between doctor and patient has more difficulty in making itself felt in our hospitals than if the general practitioner also treated the patient (or took part in the treatment) during hospitalization, this is outweighed by the advantages of the arrangement: wherever a patient may take ill or be injured, treatment is available in the nearest hospital of the standard which the hospital organization of the country can offer. The standard is uniform over the entire country.

This is closely associated with the manner in which the positions of senior physicians or surgeons are filled. The appointing authorities in such a case are the county or town councils, and one cannot demand that these should be in a position to evaluate the professional capacity of the doctors who apply for the position. Unfair consideration might even be given to factors such as personal acquaintance, political opinions, etc. In the "Law concerning the Practice of Medicine" it is laid down, however, that the National Health Service shall investigate the qualifications of the applicants before a senior appointment in a public hospital is made, and before an opinion is given

a professional committee, the members of which are elected by the scientific societies, must be heard. The appointing authorities thus receive a very expert testimonial regarding the applicant. This system implies, by and large, that in all Danish hospitals, both the large and small, the physicians or surgeons-in-charge holding the appointments are those best qualified when the positions were vacant.

Even although the senior medical officers in the larger hospitals are appointed full-time in superannuated positions, they have also the right to receive patients in private consultation and from them receive fees as any other specialist, while they receive no direct payment for the treatment of the hospitalized patients. The junior medical officers, registrars and house officers (residents and interns) are appointed for short terms and move frequently. They receive a reasonably good salary corresponding to that which young graduates in Denmark can expect to receive. This salary includes contributions to the private superannuation scheme organized by the Medical Association (see page 197). The work of the young medical officers is no longer regarded solely as part of their education in the sense that they only need be offered a nominal salary.

Out-patient treatment in hospital does not give any remuneration either to the senior or to the junior officers with the exception of payment for medical certificates issued. This state of affairs has probably contributed to the fact that out-patient treatment in the Danish hospitals is limited to the necessary follow-up treatment of discharged patients and the treatment of injuries.

At present, the salary of the senior medical officers is between 40,000 and 50,000 Danish crowns (£ 2,000—£ 2,500) per annum and for the junior officers between 20,000 and 30,000 (£1,000—£ 1,500) per annum. To the sum mentioned must be added the "extra income" obtained by the doctor from private consultation and positions and work which can be combined with the hospital post. The magnitude of this sum cannot be stated as it varies greatly with the individual. Where house officers are concerned it is insignificant (fees for medical certificates).

Many may consider this remuneration of highly qualified work as unsatisfactory when compared with the conditions in their own countries.

Such comparisons from one country to another as regards the economic conditions are, as a rule, very deceptive. The official exchange does not render any clear picture of the buying power in the foreign country and at home and other conditions may be of significance. Rent may vary greatly from one land to another. In Denmark the level is not high as rent is under official control. Many of the hospital doctors concerned here have cheap (and in the case of physicians-in-charge also good) accommodation on the hospital premises. Taxation varies greatly from land to

land, and as in Denmark the amount paid in tax one year is tax-free the next year, taxation of incomes which are fairly uniform from year to year cannot normally exceed 50 per cent. In addition to this, education at schools and universities is practically free of charge.

Finally, the "wealth" of the individual must be measured in relation to the distribution of wealth in the community to which he belongs, and in Denmark doctors occupy a favourable position.

It is not only in connection with the conditions of hospital doctors and their salaries that the public hospital organization has had an effect of far-reaching significance for the medical profession. It must be recognized, that it has gradually caused a division of the medical profession into two categories with very different conditions of work and somewhat different views of their work: hospital doctors and those doctors, specialized or otherwise, who are in practice. The differentiation is sharpest between the general practitioners and hospital doctors as practising specialists in numerous instances can maintain contact with hospital work (*e.g.*, as consultants) while the general practitioner, after having concluded his education, as already described, is cut off from active participation in hospital work.

#### *The Significance of the Organization of Public Hospitals for the Population.*

For the population, the organization of public hospitals has the great significance that hospital treatment for the individual is inexpensive as it is financed by means of taxation.

The normal charge at present is 7–12 Danish crowns (7–12 shillings) per day in an ordinary ward. (Payment may vary within these limits from one hospital to another). The number of private rooms, as mentioned previously, is very limited. In some hospitals a private room may be had, if desired, and the cost is as a rule higher, twice the normal or slightly more, while in other hospitals private rooms are reserved for particularly ill patients and the cost is then the same as for a bed in an ordinary ward.

In the sums mentioned *all* expenses in connection with the hospitalization are covered, not only nursing care but every form of investigation and treatment. These rates have only actual significance for the few patients who are not insured. The insurance policies for sickness recognized by the State will be mentioned later. It will only be mentioned here that the 75 per cent of the population who are covered by the insurance policy for those of limited means, have no expenses whatsoever in connection with a period of hospitalization, while the 11 per cent who are covered by the policy for higher income groups need only expend a few shillings daily for a period of hospitalization. The remaining 14 per cent are partly "the upper ten" who are well able to defray the

above-mentioned payment for a period of hospitalization and partly the very limited section of the community for whose stay in hospital the public authorities must pay.

A period of hospitalization thus does not involve any economic problems for anyone in Denmark. It is expensive for the community but we consider this arrangement good.

Table 5 shows the actual running costs per hospital bed per day over a period of years.

Table 5.  
*The Running Costs of the Public Hospitals.*  
1900–1955/56

	Total in 1000 Danish Crowns	Per Inhabitant Danish Crowns	Per Sick-Day Danish Crowns	On 1935 Basis	
				Per Inhabitant Danish Crowns	Per Sick-Day Danish Crowns
1900 <sup>1)</sup>	4689	1.91	3.04	3.27	5.20
1927 <sup>1)</sup>	42527	12.19	8.98	11.58	8.53
1936/37	52531	14.01	8.34	13.73	8.17
1944/45	118655	29.32	15.58	17.45	9.27
1948/49	191817	45.34	26.21	25.47	14.73
1953/54	292423	66.37	36.94	30.30	16.87
1955/56	353361	79.12	44.92	32.03	18.19

<sup>1)</sup> Calculated on the basis of accounts from a limited number of hospitals.

#### SOCIAL SICKNESS INSURANCE IN DENMARK

In the middle of the last century another factor appeared which was of significance in the treatment of disease, *viz.*, the sickness insurance societies which later developed into the sickness insurance recognized and subsidized by the State. The "extranosocomial" system began to take shape.

The first sickness insurance societies can be traced as far back as 1857 and the government had nothing to do with their establishment. They were formed by the mass of the people as private associations, the members of which were workers and peasants who, by means of modest contributions to the association into which they had voluntarily enrolled, established means which could be employed to the advantage of members in case of sickness. The development increased rapidly in the seventies when both workers and peasants had learnt the significance of the strength of unity.

The first half of the 19th century was a very active time culturally, stimulated by the French Revolution, during which the people matured by peaceful transition from the absolute monarchy to government by the people. This occurred in 1849 during the reign of Frederik VII, whose equestrian statue stands in front of Christiansborg Palace with the inscription "Granter of the Constitution".

As a natural sequel to the political development the interest in "the common good" was very great at that time and the period was rich with "move-

ments" with idealistic and practical aims. Among these was also the "sickness insurance movement" and in this lies the explanation of the fact that the sickness insurance societies grew rapidly in number of societies and number of members, so that a *voluntary* insurance has now for decades entirely covered that section of the population which was its aim.

During the first 30 years of this growth no support was given by the State. "The Law Concerning Recognized Sickness Insurance Societies" was not passed until 1892 and its principle enactments still hold.

Table 6.

Total Number of Active Members of the Sickness Insurance Societies (Including Societies for Persons with Incomes above the Limit of the Usual Societies).

Year	No.	Percent of population above 15 years
1892	116,000	7.9
1900	302,098	20.3
1905	474,029	25.5
1910	666,924	36.5
1915	892,367	46.2
1920	1,244,758	59.5
1925	1,496,485	63.2
1930	1,685,414	65.4
1950	2,774,919	87.3
1957	2,958,378	88.6

In 1892 the membership of the sickness insurance societies was 116,000. Table 6 shows the subsequent development and the percentage proportion between the number of members and the total population. It should be noted that the number of members indicates the number of persons over the age of 15 years who are independent members; children and young people under the age of 15 years, being automatically covered by the wage earners' insurance, they are not counted as separate members. This is true for every statement concerning the membership numbers of the Danish sickness insurance membership lists wherever found. In Table 6 the membership is, of course, compared with the number of the population over the age of 15 years.

All the main objects of the present organization are to be found already in the first law concerning the sickness insurance, and the author will attempt to demonstrate the manner in which the arrangement of this system of insurance, which is the cornerstone in the Danish "extranosocial system", has influenced the organization of control of disease and the conditions of work for the medical profession.

#### *The Voluntariness of the Insurance and the Limitation of its Benefits.*

The insurance system was established in 1892 as a *voluntary sickness insurance* for the "imppecunious" section of the population, which at

that time meant for workers, craftsmen, and peasants. Membership was obtained by reporting to an insurance society and by paying the required membership subscription to this society. The district of each insurance society was normally the *kommune* (parish) *i. e.* the smallest administrative unit in Denmark. In the towns, however, the various craftsmen's guilds also established their own insurance societies.

Prior to 1892, one could also become a member of such an insurance society, already present in most parts of the country but at that time having only the membership subscriptions to cover their expenses. Following 1892 the sickness insurance societies could, according to certain rules, receive *subsidies* from the State. This implied that "recognition by the State" had been awarded when the society, had fulfilled the demands of the law concerning the activities of the sickness insurance societies. These insurance societies thus came under the control of the State and became a sort of semi-public undertaking.

The state of affairs remains the same today. The economy of the insurance societies depends upon the membership subscriptions and the subsidies from the public authorities, given according to definite rules and *not* so that any deficits in the running expenses are covered by public funds. The law demands, on the other hand, that an insurance society must have a balance in its favour and that a reserve fund be established. The insurance society runs the risk of losing its recognition by the State and, with this, its subsidy, if these requirements are not fulfilled. Table 7 shows the income of the sickness insurance societies from membership fees and public support. Membership as an active benefiting member is still, now as in 1892, voluntary and independent of any relationship to an employer.

These conditions: voluntary membership, the dependence of the insurance societies on the membership subscription and the requirement by the State of a balanced budget have together made themselves felt.

The insurance societies have always had to run the risk of a deficit as any private endeavour. The "limiting of risk" which was a natural consequence in the period prior to 1892 is however still maintained today when in some respects it can be most unfortunate and in others at any rate, inappropriate:

In order to obtain membership of an insurance society, certain requirements from the point of view of health are necessary. The insurance societies are still unwilling to take bad risks. The applicant must be fit for work and must not suffer from any temporary disease nor from a temporary flare up of a chronic disease. In cases of prolonged disease, the insured individual may "use up" his benefits from the insurance society, *e. g.*, the right to further benefit from the insurance society ceases after 60 weeks hospitalization in the course

Table 7.  
Income of the Sickness Insurance Societies from Membership Fees and Public Support 1894—1956.

	1894	1910	1920	1930	1940	1950	1956
Membership Fees ..	934.705	4.967.631	17.348.605	30.811.407	56.429.470	119.527.900	190.160.000
Public Support ....	442.321	2.246.660	7.548.820	10.864.660	22.042.072	39.423.400	70.490.800
Other Incomes ....	102.238	442.700	772.312	3.469.634	4.081.343	11.338.900	21.006.400
Total .....	1.479.264	7.669.360	25.669.737	45.145.701	82.552.885	170.290.200	281.657.200
Per cent:							
Membership Fees ..	63.1	64.8	67.6	68.3	68.4	68.5	67.5
Public Support ....	29.9	28.7	29.4	25.9	26.7	23.1	25.0
Other Incomes ....	10.0	5.5	3.0	5.8	4.9	8.2	7.5
Total .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0

of 3 years; these are some of the more stiking defects in an insurance system recognized by the State.

#### *Accident and Disability Insurance.*

Until 1921 the insurance system, on principle, did not cover permanent disability caused by disease. An *accident insurance* similar to the accident insurances required by law in other countries was introduced in 1898, but the insurance which was necessary to cover the population for the risk of prolonged disability was not introduced until 1921. On introduction this was made obligatory for the members of the insurance societies as an expression of the fact that it was regarded as a supplement to the insurance arrangement recognized by the State. A few years later, however, it became obligatory for the entire population.

This disability insurance has its own administration (and economy) quite separate from that of the insurance societies. It is financed by means of a special membership subscription and by contributions from employers. The State covers expenses not covered by these sources of income. This is a national institution unlike the insurance societies, which are private endeavours having obtained recognition and subsidies from the State. It may be said that insurance for incapacity expresses a more "advanced" or more modern form of insurance than the sickness insurance societies. It is obligatory for all and the State is a guarantor for its economy.

The disability insurance has two tasks: 1) to pay pensions to those who are disabled where such are required and 2) to take the initiative and pay for the rehabilitation of disabled persons. The Disablement Insurance Court is the central instance of rehabilitation and together with the arrangements mentioned previously concerning the treatment and education of the blind, deaf, cripples etc. it represents the Danish system of rehabilitation.

#### *Requirements for Active Membership of the Sickness Insurance.*

The membership subscription fees for the sickness insurance societies have always been, and

still are, *uniform for all members*. The graduation of the subscription with division of the members into various income groups, practised in the sickness insurance systems in some countries, has never been employed in Denmark.

The Danish sickness insurance organization was established in 1892 as a *family insurance* and this is one of its good aspects. As it was not made obligatory for certain groups of the population, whose membership subscription could have been ensured by associating the insurance arrangements with an employer, admission to the insurance was thereby achieved for all members of the family. Thus, interruptions of the insurance during periods of unemployment were avoided and children and young people were always covered by the insurance if the bread-winner was a member. This circumstance, that the Danish sickness insurance organization from its origin long ago very definitely aimed at covering *all* the members of the family, is a very good arrangement, and it has probably contributed greatly to the fact that "the family doctor" has established his position within the Danish health system.

By the sickness insurance law in 1892 it was determined that the sickness insurance arrangements recognized by the State should be an insurance for the "*impecunious*" section of the population, and not an insurance for the entire population. In the words of the law, it should be for impecunious workers, peasants, craftsmen, and tradesmen, individuals in low-wage employment and other men and women similarly placed economically. Since then an "income limit" has been established. This is placed so that, at the moment 75 per cent of the population can be admitted to membership of the sickness insurance societies. "Impecunious" is thus not synonymous with "poor".

In 1892, 75 per cent of the population would *not* have satisfied the necessary conditions for admission to the sickness insurance societies. During the course of the years, displacement upwards of this income limit has occurred and this is partly due to the fact that the wage level of workmen which is decisive for determining the limit, has increased more rapidly than those of the other



Table 8.  
Cash Benefit Insurance in Authorized Sickness Insurance Societies 1955.

	Men No.	Women No.	Total No.	Men Per cent.	Women Per cent.	Total Per cent.
0 øre .....	54693	359653	414346	4.7	28.5	17.1
40 øre .....	703530	556373	1259903	60.8	44.0	52.1
1 kr. ....	221883	267102	488985	19.2	21.1	20.2
2 kr. ....	61576	51400	112976	5.3	4.1	4.7
3 kr. ....	50292	16016	66308	4.3	1.3	2.7
4 kr. ....	20272	3575	23847	1.8	0.3	1.0
5 kr. ....	17991	3366	21357	1.6	0.3	0.9
6 kr. ....	26588	5448	32036	2.3	0.4	1.3
Total .....	1,156,825	1,262,933	2,419,758	100.0	100.0	100.0

groups of the population, and partly to the fact that the limit is now raised considerably for each dependent child and also with a sum which corresponds to that paid in tax in the preceding year.

This income limit is now generally considered as having become so high that it must either be discarded or reduced.

When the income limit was determined by law in 1892 it frequently occurred that persons who had been members of sickness insurance societies in their youth, later exceeded the income limit and were, therefore, excluded. If their income again fell below this limit in later life, they could frequently not be accepted as they did not fulfill the physical requirements. On account of this, on the initiative of the insurance societies themselves, there rapidly became established special insurance societies for people in better economical circumstances. These became known as "Continuation Insurance Societies" and in 1933 they became integrated as part of the insurance system. Members of these continuation insurance societies may, at any time, irrespective of age or state of health, be transferred to an insurance society should their income fall below the set limit.

These continuation sickness insurance societies are subject to certain control (accountancy) from the State but the State does not contribute to their running expenses.

Approximately 11 per cent of the population are insured in these continuation insurance societies and of, when estimating the proportion of the population if Denmark covered by the voluntary insurance system, these are also included, the percentage today is between 85 and 90 (see Table 6, p. 191).

The division of the system into an insurance for "impecunious" and an associated insurance for "better-off" was, as has been explained, determined historically. A certain consensus of opinion is in favour of retaining the system as it is. The reason for this is that it may be advantageous to have two "departments" within the insurance system, as in this way, the subsidy given by the State may then be limited to the department of the impecunious and nevertheless a system of insurance is retained offering the entire population adequate assistance in the case of illness.

#### Benefits by the Insurance Societies.

The law of 1892 concerning the insurance societies determined the benefits by the insurance societies in such a way that certain benefits were obligatory, while the insurance society itself could determine how much more could be offered to the members. This is a characteristic trait in the organization of Danish insurance, that the obligatory benefits were primarily for medical attendance, hospitalization and drugs (according to certain rules), while the payment of money per sick day has remained a *voluntary arrangement*. The insurance societies offer their members an insurance with cash benefit per sick day on the payment of a certain extra subscription but this cash benefit has never been of great significance, probably because the *treatment* of disease does not involve any special expenses for the members. Surprisingly few members of the insurance societies contribute to this voluntary cash benefit insurance (Table 8).

Recently, the question of "cash benefit during illness" was solved for a large proportion of the population by means of agreement between the workers' and the employers' organizations. According to this agreement, both the employees and the employers contribute to a fund from which the workers receive a cash benefit during illness. This benefit corresponds in amount to that which they would have received during periods of unemployment from the unemployment insurance. This arrangement which is *administered* by the insurance societies although not financed by them does not, however, solve the problem for all members of the insurance societies, but an increasing proportion of the rest are employed as civil servants and have a right to full salary during illness.

Members of the insurance societies recognized by the State are ensured *treatment in the public hospitals free of charge* (in public wards). The insurance society does not, however, cover the expenses involved in this hospital treatment. As mentioned previously, everyone in Denmark has access to the public hospitals for a very small payment and the duty of the insurance societies is merely that they shall pay this very low rate minus 50 per cent rebate ensured them by the law.

Thus it is not the insurance societies which offer free hospital treatment for their members but, practically speaking, the local authorities who run the hospitals.

Treatment in hospital is thus a very cheap form of treatment for the insurance societies, but for the community, in particular the local authorities, it is very expensive. There are thus here controversial interests between the nosocomial and the extranosocomial system and these are further emphasized by the fact that the latter has rather a strict budget and must have a balance between income and expenses, while the local authorities must pay for the upkeep of the hospitals. There is, however, a certain degree of regulation in the utilization of the hospitals. Admission to hospital can only take place on the recommendation of the doctor who has treated the patient. In addition to this, the hospitals, particularly the larger ones, reserve the right to a certain evaluation of the necessity of the admission.

The problem of treatment at home versus treatment in hospital is well known everywhere, and the increasing strain on the hospitals has many causes, but in Denmark the condition mentioned above is one of them. The question will be discussed further in the following section.

As regards the duty of the insurance societies to *pay for medical attendance*, the law of 1892 contains this clause: in the *case of illness* the insurance society must pay for *medical attendance*. This clause has not been altered since.

It is indicated here that the duty of the insurance societies to pay for medical attendance is limited to *cases of illness*. When this clause was formulated there was perhaps no reservation in the directive concerning prophylactic treatment. The only form of vaccination which was known at that time, *viz.*, smallpox vaccination, was paid for by State, and medical examinations of apparently healthy individuals were not under consideration at a time when the impecunious section of the population had not yet been ensured treatment in the case of illness. Later, various forms of vaccination and health control examinations, particularly of children and pregnant women, were considered indicated, but on account of the wording of the law these tasks could not be solved by the insurance societies despite their natural connection with the treatment of disease. As will be described later, they were solved by the State and local authorities.

#### *The public sickness insurance and the medical profession.*

The clause that the insurance societies should offer their members medical attention free of charge was the factor which became of the greatest significance for the medical profession, in proportion as the insurance societies grew.

This clause determines that the Danish insurance societies must not employ the "system of refunding" in paying for medical attendance, they can not limit themselves to refunding their members a fraction of their expenses for medical attendance. They must pay the entire sum, and it is thus reasonable that they have arranged to *pay the doctors directly*. This has naturally led to the fact that negotiations were instituted with doctors to fix the fees and to have these fixed at as low a level as possible.

The situation was not entirely new for the insurance societies in 1892. The membership was, as mentioned previously, already 116,000 at that time and even although the first agreements with doctors around 1860 were private agreements between an isolated doctor and insurance society with some fifty members, the doctors had already their "district associations" over the entire country. In 1857 these combined to become "Den almindelige danske Lægeforening" (The Danish Medical Association) which celebrated its first centenary in 1957. Thus, very little time elapsed before the Medical Association played the part of regulator in these agreements. At that time doctors were extremely co-operative with the insurance societies and modest in their charges. It must be borne in mind, as was mentioned previously, that a people's insurance "movement" was concerned in an awakening democracy in which everyone was in an idealistic frame of mind under the influence of the motto of the French Revolution: "Liberty, Equality and Fraternity". Feelings were extremely fraternal towards the striving insurance societies and their poor members, who could now have the satisfaction of paying the doctors for an attendance which previously had had to be accepted as a charity.

The result was, naturally, very low fees, which gave the pioneers of the insurance movement an entirely false conception of what adequate fees for medical attendance should be. At that time this was of limited significance as the insurance practice meant so little for the general practitioner's economy. It later proved to be extremely difficult to break from these agreements and the idealistic attitude of the medical profession towards the first insurance societies became rather an expensive affair for them.

The fact that the income limits gradually rose to a higher level than the original, so that the insurance societies began to include a section of the population who had previously belonged to the private clientèle, contributed to this. This section of the community had no reasonable right to receive medical attendance at the low fees which were accepted when "impecunious" really meant impecunious.

It was a natural sequel to the strict budget of the insurance societies and their duty to make their expenses balance that they not only desired to *limit* their risk to the absolute minimum in

connection with the offering of medical attention but that they also wished to be able to *survey* it. The insurance societies have therefore always been greatly interested in obtaining agreement concerning a capitation fee in order to avoid the less predictable risk involved in the fee per attendance.

Already prior to 1892 many of the "private agreements" were based upon a capitation fee. This was the same principle of payment which dominated the financial agreements of the upper classes with their family doctors. Practitioners in the country were, however, very reluctant to allow the insurance societies this concession. Both forms of payment are still employed. In the rural districts the fee per attendance dominates and in towns the capitation fees are ubiquitous, with however, extra fees for certain services.

The law of 1892 requires the insurance societies to supply medical attention free of charge but makes no mention of *specialist treatment*, and this remains the case today. It might be thought that the legal authorities did not express themselves clearly in 1892 or that specialization had not made itself felt at that time. This is, however, not the case. There were specialists at that time, but when the law was enforced, it was communicated administratively to the insurance societies that only attendance by the general practitioner was an obligatory service, whereas attendance by specialists was not the concern of the insurance societies unless they themselves desired and could afford to undertake this responsibility. The words of the law and the interpretation remain unchanged today.

A clause of this nature must, naturally, influence the conditions of work for the medical profession very markedly and there can be no doubt that it contributed to giving the general practitioner the strong position as a family doctor which he possesses in Denmark. Another contributory factor to this, mentioned already, is that the sickness insurance arrangements were established from the commencement as a family insurance.

How has the increased specialization affected this development?

At that period the general effect of the rapid growth of the insurance societies made itself felt, *viz.*, a reduced fee for at rapidly increasing proportion of the community, of which the greater part were not yet sufficiently mature to react to "free medical attendance", with proper understanding. The rapidly increasing demand for medical attendance could not be compensated by an increase in the number of the practitioners concerned.

*Simultaneously*, medical knowledge was in a state of development which increased the demands upon diagnosis and therapy from year to year, the work involved with each individual patient was greatly increased so that gradually the general

practitioner could not fulfil the demands of work and knowledge made upon him. Not only did specialization continue to make itself felt but diagnosis demanded technical methods and equipment which practitioners, under the circumstances, had neither the time to employ nor the means to obtain and run.

These circumstances were primarily and most markedly felt in Copenhagen, where a solution became absolutely necessary to avoid entirely meaningless overloading of "the nosocomial system", both the expensive beds and the polyclinics, which quite naturally under the circumstances had been established not only associated with the hospitals but also as independent clinics elsewhere in the city.

This development was checked by two measures. First, general practitioners established their own *medical laboratory* to which they could refer patients when time-consuming and technically exacting investigations were necessary to establish the diagnosis. This laboratory rapidly mastered all technical and laboratory investigations which can be undertaken on out-patients and it is now a very large institution. It also offers technical assistance for practitioners in the treatment of patients confined to bed.

This represents, in any case, one solution of the problem which is present in many countries: How can the extra-nosocomial system be balanced with the nosocomial system as regards techniques of examination where the two systems function so separately as is the case in Denmark. "Group practice" may be mentioned as another solution on account of common ownership of the technical aids.

The laboratory is not a diagnostic centre. Only those investigations are undertaken upon the patients which the practitioner has asked for. In this manner, the laboratory helps the practitioner to establish the diagnosis but it does not attempt to establish the diagnosis for him.

Outside Copenhagen, no such laboratories have been established, because another solution of the same problem seemed more appropriate and proved possible. The distance to the nearest hospital is nowhere far and the hospitals have all the necessary technical and laboratory equipment. Overloading of the nosocomial system has also been marked in provincial hospitals, and therefore the hospital authorities have been interested in making the hospital laboratories and X-ray departments available for the practising doctors so that they can refer their patients for investigations on the same conditions as are available for practitioners in Copenhagen in their laboratory. By these means, admission to hospital can be avoided in many cases.

The other measure which checked the development in Copenhagen described above in was that the insurance societies, in agreement with the medical associations, agreed to cover the cost of



specialist attention for all specialities for their members. This attention was to be undertaken by practising specialists, *i. e.*, specialists who receive the patients in their own offices instead of including them among the out-patients in the hospital in which the specialist possibly held a position.

If the insurance society is only obliged to refund part of the expenses for medical attention and to pay such sums according to a tariff established by the insurance society or the national administration, which is the case in many countries, this does not involve any problems for the system. Financial problems may be involved for individual patients and these originate from the fact that specialist attention is, normally, more expensive than ordinary medical attention, but this remains an individual problem.

If the insurance society is, however, obliged to give its members *free* medical attention, problems are involved when this obligation is extended to cover attention by specialists.

The giving of free medical attention presumes that the system is either so powerful that it can make civil servants of the medical profession or that the system can obtain agreement with the medical profession as regards the magnitude of the fees. The system would, otherwise, be entirely in the power of the members of the insurance societies (or the medical profession).

Only if the system is a national arrangement will it be powerful enough to give the medical profession positions as civil servants or resembling those of civil servants. The system was not as powerful as this around 1920, nor is it today.

If the insurance societies are to be able to give their members both free medical attention and free specialist attention then negotiations must be undertaken and agreement must be obtained concerning the co-operation of general practitioners and the specialists. The question then arises: How is the work to be divided between the general practitioner and the specialist? The system of refunding relinquishes this to the free play of the parties concerned and the patient's choice. A system which must arrange for *free* medical attention cannot do this.

The negotiations thus became debates concerning the *necessity* of specialist attention and of who should decide whether it was necessary. The insurance societies were only willing to pay for "necessary" specialist attention.

It has been mentioned that the Danish sickness insurance system was, from the commencement, a family insurance and when it is considered, in addition, that attention from only the ordinary general practitioner had been counted upon, then it is not surprising that the advantages of the system of the family doctor coloured the negotiations. The result was, inevitably, that the decisions should be undertaken by the family doctor.

Many physicians from other countries will consider that this does not give a free choice of doctor. Such a system compels the individual employing the system first to consult a general practitioner who will then decide whether specialist attention can be given at the expense of the insurance society.

However, by means of such an arrangement it can be ensured that the extra-nosocomial system can give the insured person *free* (necessary) *specialist attention*. Specialist attention is thus not given in institutions but in just as personal a manner as the ordinary medical attention given by the family doctor. In addition, the arrangement created the possibility for good co-operation between the general practitioner and the specialist, and the extranosocomial system must also have its teamwork nowadays just as the nosocomial system has. The arrangement implies co-operation instead of competition. A final advantage is that the family doctor system has been consolidated and has become more effective, and many are of the opinion that progressive specialization renders this particularly desirable.

It is obvious that the Danish medical profession has become more "bound" by means of the agreements than the profession is in such countries in which the sickness insurance system is not based upon negotiations and agreements. On the other hand, however, these negotiations which have also been concerned with the organization of medical care as a whole have made possible the building up of a favourable medical service. This possibility is only available to a limited extent if development can be influenced solely by means of collegial conventions.

The negotiations have been employed to build up a system of medical care in which the general practitioner, as family doctor, has become the central figure, and to consolidate the system by supplementing its defects without weakening its construction. Certain traits in the Danish sickness insurance system have facilitated these efforts, and the aims of the Medical Association in this respect have remained firm.

Among the advantages which the discussions and agreements have produced in the course of time, it should also be mentioned that the agreements with the insurance societies contain a mutual clause concerning the obligation of organization, and for the medical profession this implies that membership of the Danish Medical Association is a condition in order to practice according to the agreement. This clause has, in any case, not weakened the position of the Danish Medical Association.

#### *Influence of the insurance society system upon the financial position of the medical profession.*

Not long after the insurance societies had been recognized by the State, their large membership



numbers made their position rather powerful and the circumstance that they gradually solved a very comprehensive task for society strengthened their position even more.

This made itself felt for example, in 1915, when a change in the law concerning sickness insurance caused the establishment of an arbitration committee to solve disagreements between the medical profession and the insurance societies. In this manner, the State showed its interest for the mutual relationship between the insurance societies and the medical profession, and this is also apparent from the fact that the agreements between the insurance societies and the medical profession must be recognized by the Ministry of Social Affairs.

This does not imply, however, that the conditions of work for the Danish medical profession, despite all the talk about free negotiations with the insurance societies, are determined by the State. Conditions today are such that the Danish medical profession can terminate the agreements with the insurance societies at any time it wishes.

In such a situation it might be considered that the arbitration committee would come into function, but this would only happen if the insurance societies, in this imaginary situation, appealed to the committee in respect of the conflict. The latter would then attempt to arrange an agreement and would possibly present a proposal for mediation. However, if the Medical Association were not of the opinion that it could accept this proposal for mediation, further progress according to the law would be as follows: "The verdict is presented to the Minister of Social Affairs who may undertake further steps towards the solution of the conflict and may possibly publish the verdict". No one knows what this actually implies as the negotiations throughout the years have not given cause for such desperate action on either side.

The arbitration committee consists of 3 members elected by the Insurance Societies Central Association in Denmark and 3 members elected by the Danish Medical Association. These members elect a chairman who has the casting vote in certain situations. If the members mentioned cannot agree regarding the election of a chairman then he is elected by the Ministry of Social Affairs.

This is the attitude at present of the Danish Medical Association towards the sickness insurance societies recognized by the State.

What is the economical level that has been regarded as so acceptable from the practitioners' point of view that a schism has been avoided?

The average gross income of the general practitioner from insurance practice is between 40,000 and 60,000 Danish crowns per annum (£ 2,000—£ 3,000) depending upon the relationship between the population and number of practitioners within the region concerned. In addition

to this is the income from the 25 per cent of the population who are not members of any sickness insurance society, income from prophylactic attention and from appointments and positions of various sorts and, in the rural districts, a mileage allowance. It is impossible to state exactly what the total becomes but the net income (running costs are estimated as approximately  $\frac{1}{3}$  of the gross income) is scarcely less than that of one of the higher civil servants, and when in the negotiations concerning payment the opponent is a "half public" body and the society concerned is one in which "few have too much and even fewer too little" (a quote from a Danish national song) it is not easy to achieve more.

Where practising specialists are concerned, the income for the insurance practice of eye specialists and ear, nose and throat specialists lies on a corresponding level, while for other forms of specialization it is of lesser significance.

#### THE SUPERANNUATION SCHEME OF THE DANISH MEDICAL ASSOCIATION

Experience revealed that many colleagues when they died or were disabled by illness were quite inadequately insured. The Danish Medical Association, therefore, took the initiative in establishing a collective old age and disability pension scheme for the entire medical profession in 1946.

This was no easy matter as an advantageous insurance scheme presumes 100 per cent participation, in any case from a naturally delimited "group". The Medical Association cannot "resolve" that a definite group of doctors, or the entire profession, must take out a certain form of superannuation insurance. In addition, it was of significance to find a form of insurance in which the payment of the premiums was independent of the initiative of the applicant, as experience had revealed how often it failed.

The condition was utilized that the Medical Association can form an agreement with another party with binding effect for each doctor working according to this agreement. There are two very large "groups" within the medical profession which together comprise nearly all the members of the profession who work according to agreements with a contract: 1) doctors who practice according to agreement with the hospital authorities and 2) all practitioners who practice according to the agreements concluded with the insurance societies. In these agreements a clause could be inserted that a fraction of the payment to the doctor should be retained by the administration of the hospital or the insurance society, respectively, and be paid to the Medical Association, who, by submitting this sum to the management of a financial institution could establish an excellent arrangement for superannuation with pensions both for age and disability. The two other contracting parties, *viz.*, the hospital authorities and the insurance societies, agreed to co-

operate in the conduct of such an arrangement with binding effect for the two groups of doctors mentioned.

In this manner, 100 per cent participation from the two large groups of doctors was thus obtained. A superannuation scheme was obtained which *automatically* included all doctors working according to the mentioned agreements. The fact that the Medical Association itself administers this superannuation scheme implies that it may easily be adapted to the special requirements of the medical profession and not involve any "superannuation relationship" to the hospital authorities or the insurance societies. If the conditions necessary in the agreement should cease, the insurance may be continued if the doctor himself undertakes to pay the premium. The arrangement requires membership of the Danish Medical Association but this has not limited its scope. Although the Danish Medical Association is a private association with voluntary membership, practically all members of the medical profession in Denmark are members.

#### PROPHYLACTIC MEDICAL SERVICE

As previously mentioned the insurance societies only offer help in the case of *illness*. Prophylactic measures, therefore, have had to be financed by public authorities through the State and the local authorities.

In 1937, an Act was passed concerning the prevention of morbidity and mortality among children in the first year of life. This provides visits by a health visitor to healthy children during the first year of life. In 1945 the Pregnancy Hygiene Act was passed granting free examination of all expectant mothers by a physician and midwife, in 1946 an Act concerning medical examination of infants and children of pre-school age was passed and in 1947 the School Medical Service Act was passed. In addition, an act was passed in 1943 concerning prophylactic vaccination for diphtheria and in 1955 the Anti-Poliomyelitis Vaccination Act was passed.

When the medical work involved in these laws was organized, the Public Health Board bore in mind that the medical arrangements which had been build up by negotiations with the insurance societies had established such a firm connection between families and their family doctors that it appeared natural to utilize the connections these doctors possessed. It therefore became the task of the general practitioner to undertake the prophylactic attention of children prior to school age and of pregnant women, in addition to the vaccinations mentioned. In Copenhagen and some of the larger towns there are also clinics which undertake these tasks and the choice is free for the individual concerned. For the country as a whole, however, by the far greater part of the prophylactic attention, in accordance with the afore mentioned law, is carried out by the

general practitioner. Where this is the case, the natural connection between therapy and prophylaxis is not impaired. The prophylactic consultations are remunerated by a fee per consultation.

#### THE FAMILY DOCTOR

In summing up, it may be said that in the organization of medical care in Denmark a firm connection between the family and a single general practitioner who is the family doctor has been maintained. The connection between the family and the family doctor is voluntary. The family may choose another doctor if desired and the individual members of the family may also each have their doctor. Experience has shown, however, that the connection between the family and their general practitioner is very firm and often very personal. The significance of the acquaintance with the environment concerning his patients, obtained in the course of years by the general practitioner, is obvious.

In this manner, a type of general practitioner has arisen who on account of his position and his medical tasks includes something more than medical practice in his work. This may be said of a doctor in any position but the opportunity presents itself most frequently for the family doctor and the ability develops thereafter.

The arrangement does not permit a member of an insurance society to "wander" from specialist to specialist or to seek specialist attention at the expense of the insurance society except when he is referred by his own doctor. A patient may, of course, do this at his own expense; this, however, is rather an advantage than a disadvantage in the family doctor system, as the patient requires a guide in the jungle of specialization in order to appreciate its advantages without being exposed to risks. Finally, it would be to abuse the highly qualified working power of specialists to send them an unselected material of patients. The period of education for specialists is rather long and the places where they can receive this education are limited.

#### THE HEALTH AUTHORITIES AND THE MEDICAL ASSOCIATION

The relationship between the medical profession, the Medical Association and the Health Authorities is of the greatest significance for the development of the health services in any country. The administrative organ which represents the national authorities is the National Health Service in Denmark. This has existed since 1804, and, in the past decades, in particular, under the directorship of the present medical director, Johs. Frandsen, it has developed into a very influential national institution.

As every other administrative unit, the National Health Service belongs to a ministry, in this case

the Ministry of Internal Affairs. As the experts represented by the National Health Service cover all medical and hygienic questions, it is tempting to question if the administrative field of the Ministry for Internal Affairs covers the same fields and whether it covers *all* subjects of significance for the health of the people, in fact if it is a Ministry of Health.

This is not the case. A number of institutions for treatment belong, as already mentioned, to the Ministry for Social Affairs; Rigshospitalet (The University Hospital) belongs to the Ministry of Education; the social insurance arrangements, sickness insurance, disability insurance and accident insurance belong to the Ministry of Social Affairs; the school arrangements belong to the Ministry of Education, etc. In addition to this, public questions which do *not* include a medical problem are very few.

This is probably the reason, or one of the reasons, that there is no Ministry of Health in Denmark to take care of "everything concerning health". The problems of health are too widespread and too much involved to be collected in one Ministry. The consequence of this is that the National Health Service has developed so that it is not only the administrative and advisory body within the field of the Ministry under which it functions but that it acts also in an advisory capacity to all branches of administration where problems of health are concerned.

In this manner, the National Health Service has obtained great significance as a co-ordinating factor in the development of the health services in Denmark. The advisory and co-ordinating contribution by the National Health Service was of particular significance during the building up of the Danish hospital system. As mentioned previously, much more independence is present in the smaller towns and the counties, which own and run the majority of the hospitals in Denmark. To achieve a rational planned extension of the hospital organization as a whole co-ordination is, naturally, both desirable and necessary. This was further ensured by the establishing of a "Hospital Advisory Committee" according to the Hospitals Act of 1946. In this committee, all the interested parties are represented with co-ordination in view.

The National Health Service has a very elastic and effective construction. In addition to the permanent civil servants, of whom there are relatively few, a considerable number of doctors are associated with it as consultants and these represent such varied expert knowledge (and of such a high standard) that the National Health Service is competent to handle every professional or administrative problem.

The relationship between the medical profession and its organization and the health authorities is good in some countries, somewhat cool in others

and in some countries not so good. The possibility of conflict is inevitable in every country.

If, for example, the National Health Service had favoured extension of the ordinary hospitals throughout the country with large "open" polyclinics (open signifying that anyone, on their own initiative, could seek attention there), and had favoured organization of the prophylactic measures also upon an institutional basis, this would not have been in accordance with the conception held by the Danish Medical Association as regards the most suitable arrangement.

It may well be said that the reason that this chosen example has not occurred was that the National Health Service and the Danish Medical Association fortunately have agreed that institutional treatment should be preferred only in such cases where it is really necessary and that the extra-nosocomial system should be equipped to perform all the services it can. This, however, is only half of the truth. Fortunately the National Health Service and the Danish Medical Association, not only in this instance, but in many other questions, by means of objective co-operation, have been able to solve the problems of the times.

A further example of co-operation between the National Health Service and the Medical Association can be given from another field into which it is difficult to obtain insight.

Medical certificates may give rise to criticism both here and elsewhere. The errors which may be committed could be of such a nature that they violate the directives in the "Law Concerning the Practice of Medicine", and it is the task of the National Health Service to complain about infringements of this law. The offence may be of minor extent but, nevertheless, be sufficient to undermine respect for medical certification. Throughout many years the Danish Medical Association has regarded this as a particular task to maintain, and its "Certificate Committee" acts as consultant to the National Health Service not only concerning offences concerning with certification but also concern other certification problem of importance. This form of co-operation has proved extremely useful. It is only named as an example. Other permanent committees of the Danish Medical Association have the same status as consultants to the National Health Service.

#### THE LEGAL POSITION OF THE MEDICAL PROFESSION

A few remarks are called for here concerning the public control that the members of the medical profession conduct their practice conscientiously and with due care.

The demands made by society are formulated in a law concerning the proper practice of medicine. This law did not take effect until 1934 and,



by and large, it codified good customs and behaviour among the medical profession in accordance with the profession's own conception of the duties of the individual doctor towards patients and society.

The National Health Service has the prerogative of charging a doctor for infringement of the law or, expressed in another way, no case can be brought against a doctor for infringement of the law except by the National Health Service. If a doctor infringes the *Criminal Law* the case is brought against him in the ordinary manner, but whether or not the doctor concerned can be sued to lose his right to practice in this connection is a question for the Health Service to decide. These directives imply that doctors are not sued unreasonably.

The law covers, in fact, only very gross breaches of medical ethics. Justice within the Danish Medical Association is more strict and is exercised by the local sections, who have their arbitration committees, above which is the high arbitration committee of the Danish Medical Association.

Disputes between colleagues, and cases in which duties implied in various agreements have not been adhered to are also concerned here, but every action which seriously weakens the reputation of the profession may be judged and possibly condemned.

"Condemnation" is, in itself, a serious punishment, but the most severe punishment is exclusion from the Medical Association. This would affect the greater part of the members of the Association very severely as, according to the agreements with the Sickness Insurance Societies, it would exclude the practitioner in question from practice among 75 per cent of the population. A practitioner thus excluded may appeal to the Ministry of Social Affairs, but as mentioned previously, the agreement with the Sickness Insurance Societies, in which this clause is present, is recognized by the Ministry. It has never occurred that the Danish Medical Association has been exposed to pressure

from the authorities to re-admit a member excluded previously. On the contrary there is considerable evidence that the authorities do not desire to weaken the possibilities possessed by the Danish Medical Association to guide its members in the few cases in which this is considered necessary.

This article has been an attempt to answer some of the most important questions pertaining to the conditions of the medical profession as a whole. The information given here naturally does not cover everything but the author hopes that he has been able to give the readers an impression of the position of the medical profession in Denmark at the present day, and how the health services and social insurance systems are constructed. Deficiencies and curiosities are certainly present but the medical profession in Denmark feels at home with most of them.

In 1957 a commission was formed by the Ministry for Social Affairs with the task of investigating whether the Danish sickness insurance organization was rational and effective. As early as 1927, the Ministry favoured compulsory arrangement concerning disablement insurance which included everybody, and it therefore appeared reasonable to consider whether the sickness insurance organization required "modernization".

The commission is still at work and it is impossible to state what the result will be. It is obvious that the deficiencies in the organization previously mentioned: medical examination as a requirement for admission to a sickness insurance society, limitation of benefits, etc., will be improved and the organization will probably become more streamlined, but it is by no means certain that the present voluntary insurance arrangement will be replaced by a compulsory system or by one which functions automatically.

The attitude of the Danish Medical Association is that the voluntary arrangement should be maintained with division into two main sections, with reduction of the income limit and with removal of the risk limit.

## DANISH PHYSICIANS AND THE PERIODICALS OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES

By E. SNORRASON

The 17th century marked a spiritual renaissance in Denmark. All over Europe scientific research strove to free itself from the increasingly conservative mode of thought at the universities (15). The hegemony of the Catholic Church and the feelings of unity among the old guilds were re-

gressing, following the too conspicuous seizure of power and wealth by both of them (12). The increasing understanding of the value of the individual and his possibility to contribute to and for society created a desire to exchange knowledge and news. In this connection, the develop-



ment of more rapid postal communications and increasingly improving possibilities of publication by the larger printers were of significance.

Knowledge had, however, to be treated with care: in 1560 a society, *Academia Secretorum Naturae*, was founded in Naples; the participants met in secrecy in della Porta's home. From the beginning and middle of the 17th century research workers and philosophers continued to meet in closed societies sponsored by noblemen or wealthy citizens who thirsted for knowledge. Thus, the *Academia dei Lincei* 1603 was founded in Rome (lynx: symbolizing the sharp-sighted), the *Societas Eruditionis* in Rostock, the *Academia Naturae Curiosum* (which later became the Cæsarian Leopoldino Carolina Academy of Natural Sciences which exists to this day (3)) in Schweinfurt in 1652, the *Academia del Cimento* in Florence in 1652—57, the *Royal Society of London for the Promotion of Knowledge* in 1660 and the *Académie des Sciences* in 1666 in Paris (12, 30).

In Denmark, Thomas Bartholin instituted theses in 1649—51 in a *Collegium Anatomicum* which he founded (18).

Curiosity and secrecy were the motives of the above-mentioned academies and societies. Deliberately the Royal Society commenced as an "Invisible College" for a period of 15 years. The co-operating workers, inspired by the meditations of Francis Bacon in *Novum Organum* (1629), remembered the fate of Servetus and Giordano Bruno. Secrecy was essential and was the reason that Leonardo da Vinci wrote in mirrored writing and that Vesal and Harvey destroyed their manuscripts.

At the commencement, experiments and discussions were the most important in the societies and academies, but towards the end of the century a tendency to function as institutions to aid and protect research workers began to dominate and it proved that co-operation provided strength and could be used as a weapon in the interests of a trade union (15).

In addition to the verbal exchange of ideas, the societies and, in particular, their secretaries had other important missions: in 1609 the *Academia dei Lincei* published its *Gesta Lynceorum*, the first publication from a scientific society and in 1624 their *Praescriptiones* were published. From the middle of the century the following journals were issued: *Memoires* from Académie des Sciences (1665—67), *Journal des Sçavans* in 111 volumes (1665—67), *Journal des Sçavans actions* from the Royal Society, continued as Proceedings since 1832, *Saggi di Naturali esperienze* from the *Academia del Cimento* (which included Galileo and Niels Steensen among its members), *Miscellanea curiosa medico-physica* (1670—1705) from the *Academia Naturae Curiosum* and *Acta Eruditorum* (erudere, viz., to tear out of ignorance) in 50 volumes from Leipzig (1682—1757) (2, 12, 26, 29).

The secretaries of these societies were, in addition, as Robert Bayle called them, "philosophical merchants" who sponsored exchange of letters which could be published in Transactions. The Danish astronomer, Tycho Brahe (1546—1601), was one of the first scientists to leave an extensive correspondence of this kind with publication in view (8) and Mersenne in Paris and Henry Oldenburg of the Royal Society were eagerly engaged in the exchange of letters. Leeuwenhoek, who had no knowledge of either Latin or English, had his discoveries translated and printed in Transactions in this manner. Swammerdam and Niels Steensen both had letters accepted by the same journal, the latter concerning the salamander's possibility of surviving in fire, a question greatly discussed at that period; Steensen's *Elementorum Myologiae Specimen* was reviewed both in Philosophical Transactions and in Journal des Sçavans and his work: *de musculis et glandulis*, was also reviewed in the latter publication.

#### SCIENTIFIC MEDICAL PERIODICALS IN THE SEVENTEENTH CENTURY

Physicians in the 17th century still regarded themselves as belonging to the general community of scientists. They had a university education and possessed in Latin an international language and ranged far above surgeons and barbers who kept to their native language. The learned Doctors wrote and had their work printed as books and theses in Latin. In 1618 the first attempt at a scientific periodical: *Agonismata medica*, was issued from Marburg. Half a century later, physicians in Amsterdam attempted a periodical: *Observationes anatomicae selectae Collegii privati*, but neither of these was long-lived.

In 1673 an annual periodical appeared from Danish sources and is regarded as one of the first completed scientific periodicals: Thomas Bartholin's *Acta Medica & Philosophica Hafniensia* (Figure 1). This appeared in 5 annual issues 1671—1679 (edited from 1673—1680), the first two being, as a rule, bound together and the three others in one quarto binding. How scarce they are, See Cole's inciting: "Obiter Dicta Bibliographica" (Jour. Hist. Med. all. Science, 1958, 13: 7—8)!

Why did Denmark participate so early?

The middle and the close of the 17th century were times when anatomy and medical science flourished in Denmark (11, 13, 18). Thomas Bartholin's father, Caspar Bartholin sen., in 1611 published a clear and well arranged textbook of anatomy which was employed all over Europe and Thomas' uncle, the professor of medicine Oluff Worm, (1588—1654), known for his museum, for elucidating the nature of the unicorn and for the Wormian bones which he described, had carried out an extensive correspondence with scientists all over Europe. These letters were first

THOMÆ  
BARTHOLINI  
ACTA  
MEDICA & PHILOSO-  
PHICA HAFNIENSIA

Ann. 1671. & 1672.

*Cum aeneis figuris.*



HAFNIE,

Sumptibus PETRI HAUBOLD Acad. Bibl.  
Typis GABRIELI GÖRMANI, Typogr. Reg.  
cl. 3<sup>o</sup> Dec. LXXII.

Fig. 1.

published in toto in 1728 and 1751 (6) but his nephew published a number in his "*Cista Medica*" in 1662 together with letters from Tycho Brahe (on elixir for plague) and from other famous scientists, medico-legal dissertations from the medical faculty and articles which he had written himself concerning remedies for plague, milk in the breasts as a sign of pregnancy, blood letting in apoplexy etc. This "medical scrap-book" which appeared 10 years before *Acta Medica* was the basis for Bartholin's further work with medical periodicals.

Loculus XXXVII in *Cista Medica* describes how Worm in 1636 in the home of the chancellor Christian Friis had seen the cranium of a narwhale with "unicorn horn" (identical with its tusk) and had thereby understood the origin of this remedy (10). Worm's brother-in-law, Bartholin sen., mentioned previously, had already in 1629 written learnedly on this fabulous animal. After seeing the cranium in Højbrostræde in a pharmaceutical chemist's shop, which no longer exists, Worm in 1636, undertook experiments on its effect as antidote. This gives a good illustration of that epoch and will therefore be quoted: 10 bits white arsenic were administered to each of two pigeons but one received, in addition, 5 bits grated unicorn horn; both pigeons died. A cat was given a scruple of sublimate and died after the lapse of 3 hours; another cat received the same dose but together with a scruple of the antidote and it survived (18).

As late as 1654 Thomas Bartholin sent unicorn horn to a Dutch colleague who was aware that Bartholin employed the remedy for illness in his wife and children. The substance was regarded as a valuable remedy and was hung up by gilt chains in the treasure vaults of kings and emperors. The throne of the Danish king Frederik III which may still be seen in Rosenborg castle is therefore symbolically decorated with unicorn horns (narwhale tusks).

The success with which *Cista Medica* was attended gave Thomas Bartholin (1616—80) (11), who was full of initiative, industry and journalistically minded, impetus to continue his work as a "philosophical merchant". In addition to all his scientific work with lymph vessels and the first Danish pharmacopoea he published during the years 1663—67 "*Epistolarum Medicinalium a Doctis vel ad Doctos Scriptarum Centuria I—IV*" (Figure 2) which was well received and widely read abroad — "*lecta cum aplausu & expetitae*". These can scarcely be the original letters from Worm, Pequet, Gui Patin, N. Steensen and others but epistles editorially adapted for publication. The volumes are in addition equipped with an excellent index with cross-references. Patin related from Paris Riola's preparations to dispute Bartholin's explanations of the circulation and lymph vessels, Pequet wrote on pregnancy on account of the power of imagination, Bartholin himself wrote *inter alia* about pregnant foetuses, ruminant hares, dwarfs and goblins and Basilisk eggs.

THOMÆ BARTHOLINI  
EPISTOLARUM  
MEDICINALIUM

Doctis vel ad Doctos  
scriptarum,  
CENTURIA I. & II.

*Cum Indicihus necessariis.*



HAFNIA,

Typis MATTHIÆ GODICCHENII,  
Impensis PETRI HAUBOLD, Bibl.

ANNO cl. 3<sup>o</sup> Dec. LXII.

*Imprimis Joh. S. Woldum.*

Fig. 2.

Scientists as well as laymen considered that Basilisks, viz., poisonous, winged reptiles, were hatched from cock's eggs. Such an animal could be approached only by a person holding a mirror in front of himself: the Basilisk seeing its own reflection, would then die of fright! On April 10, 1651, Bartholin dissected a cock from the royal castle which was reported to have laid such an egg. The king himself was present at the dissection which revealed neither uterus nor uterus analogon in the cock (11). In *Acta Medica* Vol. II for 1673 Bartholin records a new investigation in which an attempt was made to hatch such an egg in the officina of Becker the Copenhagen pharmacist, also with a negative result.

On the title pages both of *Epistolarum* and *Acta* is the device: "in conatu labor" (in the ascending flight efforts will bear fruit) and Bartholin strove in *Epistolarum* as in all his works for philology and philosophy to serve medicine. In accordance with this are included letters from Worm concerning the hieroglyphics on the "golden viking horn" found in South Jutland in 1639 and from Patin and Bartholin on the impossibility of causing disease by witchcraft. Patin, by autopsy, revealed the real cause of death in such a case.

During subsequent years works and casuistics by Bartholin and Oluff Borch (1626—90), were published in *Miscellaneae curiosa medico-physica*. Borch was professor and known as botanist and chemist; he demonstrated oxygen a hundred years before Scheele and Priestly (20) and gave the first description of a cardiac lesion due to a non-penetrating injury (1676) (31). *Miscellaneae*, commenced in 1670 and printed in 1671, issued from the Academia Naturae Curiosorum. Bartholin wrote *inter alia* on periodic hemicrania, sudden death, nerve lesions sustained in fencing, spurious diabetes and quicksilver in the treatment of syphilitic pregnant women without entirely understanding the scope of the treatment and Borch wrote on the excretion of lead in the urine.

The case of spurious diabetes is of interest as an expression of Bartholin's interest in transplantation treatment. Dr. Peter Bülche, court physician to King Frederik III, suffered from diabetes with marked polyuria, particularly when the moon was full! By distilling Bülche's urine, an attempt was made to obtain a salt which could "transplant" the disease to a dog. When a powerful flame was employed under the retort, Bülche felt more pain in his kidneys than with a weaker flame. The dog died from the salt but without any improvement occurring in Bülche's condition!

In the period 1671—80 Bartholin issued his own periodical, *Acta Medica*. This was a true scientific periodical from the years 1671—79 which was well edited with index (Figure 3) and copper engravings. As the motto above the articles

# Index Observationum in Actis Medicis & Philosophicis Ann. 1671. & 1672.

Parte I.

- I. Experimenta de Balsamo, ejusque succedaneis in Theriaca. *Tb Bartholini*. p. 1.
- II. Aquile Anatome. *Tb Olaf Barthelemi*. p. 6.
- III. Fragmentum ex oculis, & animalia varia in humano corpore nata. *Tb Bartholini*. p. 10.
- IV. Arteriotomia in dolore oculi. *Tb Bartholini*. p. 13.
- V. Diabetes ignis periodica. *Tb Bartholini*. p. 14.
- VI. Polypus vagi. *Tb Bartholini*. p. 15.
- VII. Muta puella curata. *Tb Bartholini*. p. 17.
- VIII. Paracanthesis in hydropica, & Anatome hydropicæ. *Tb Bartholini*. p. 16 feqq.
- IX. Scorbuti remedium G. Onlandorum. *Tb Bartholini*. p. 35.
- X. Theriaca Danica minor. *Tb Bartholini*. p. 35.
- XI. Equi Regii Anatome. *D. Simon Pauli*. p. 16.
- XII. Judicium Anatomicum & Medicum de Equi Regii morbo. *Tb Bartholini*. p. 18.
- XIII. Picis Ullus. *Tb Bartholini*. p. 41.
- XIV. Lethargus ab erysipellate. *Tb Bartholini*. p. 42.
- XV. Tumor maxille. *Tb Bartholini*. p. 43.
- XVI. Ungues monstrofi. *Tb Bartholini*. p. 43.
- XVII. Leonis Anatome. *Tb Bartholini*. p. 43.
- XVIII. Paralvis Pueri. *D. Simon Pauli, Regii Medici senioris*. p. 47.
- XIX. Cerevisia ex succo betule. *Tb Bartholini*. p. 49.
- XX. Carnis Urinae. *Ullus Tb Bartholini*. p. 49.
- XXI. Pulvis Natalis pro oculis. *Tb Bartholini*. p. 50.

Fig. 3.

Bartholin placed the words: "*De Observationibus raris Medicis & Philosophicis*" and as appears from Figure 3 it included both medical studies and anatomical investigations on animals and man (5), as well as works concerning the origin of the Order of Dannebrog, pre-historic stone memorials and trees with humps (transferred by exhalations from patients suffering from scoliosis). There are also articles on foetal monsters and on "transplantation" of jaundice. In addition to the Danish physicians such as Oluff Borch (*de menstrua per nares exeuntia*), Herman Grim, Holger Jacobæus, Simon Pauli, Niels Steensen, Johan Wililius (17) and Thomas Bartholin's brother Rasmus Bartholin and his son Caspar Bartholin (jun.) (18), foreign authors contributed observations to the periodical viz., E. Tyson (London), Daniel Protter and J. Volckamer (Nuremberg). In Volume II of *Acta Steensen's* famous proœmium at the dissection in Domus Anatomica January 29, 1673 is printed. The proœmium is particularly remembered by the quotation: "*Pulchra sunt quæ videntur, pulchriora quæ sciuntur, longè pulcherrima quæ ignorantur*". In the same volume also appeared Steensen's description of the "tetralogy of Fallot". In the beautiful, slightly abbreviated translation by the well-known cardiologist, Rector Magnificus of the University of Copenhagen, Professor of Internal Medicine, E. Warburg, the description gives a good impression of the contributions to *Acta*:

*D. Nicolai Stenonis Anatomicus Regij Hafniensis  
Embrygo monstro affinis Parisiis dissectus*

There was a cleft palate and hare-lip on the right side, and the mother attributed this anomaly to the fact that she was fond of rabbit stew.

On the left hand all the fingers but the thumb were united by a common skin fold, and the third finger was the shortest.

The lower part of the sternum consisted of cartilage and was connected with the rest of the sternum merely by a narrow union. As far as that goes, the sternum was split, and the heart, liver, spleen, most of the intestines and the right kidney had passed out through the slit, being thus uncovered. The lungs were in the thorax. The kidneys were lobulated, and the adrenals [renes succenturiati] were large and almost triangular in form.

At first the fetus was believed to be a male, but a more thorough examination revealed a large clitoris, external female genitals and a uterus. That this was no hermaphrodite was evident from the fact that no prepuce or testes were found.

The unusual form of the arteries arising from the heart attracted the chief attention and called for admiration. In particular, the pulmonary artery, which was much narrower than the aorta, seemed to be suggestive of something new, and hence I opened this vessel from the right ventricle to the hilus pulmonum, and then I could plainly see that the communication between the pulmonary artery and the aorta [ductus arteriosus] which usually is quite distinct in any fetus, was completely absent.

When I opened the right ventricle, however, the probe that was passed forward and upward along the interventricular septum entered directly into the aorta just as readily as the probe passed from the left ventricle into the aorta.

Thus, no less than three openings led into the right ventricle: one from the right atrium, the other two being connected with the arteries. The same aortic canal that was common to both ventricles, found, together with the interventricular septum, a double opening. The auricles were normal.

Although in this case the arteries were of uncommon structure, the resulting effect of this was in compliance with nature, like the circulation of the blood in any fetus occurs. Just as the vena cava empties into both atria [through the foramen ovale], the right ventricle empties into both arteries; just as the left ventricle receives blood from both auricles, thus the aorta receives blood from both ventricles at the same time. So, no matter whether the blood leaving the right ventricle first passes through the pulmonary artery and then is sent through its own channel [ductus arteriosus] into the aorta, or the aorta receives the blood directly as it partly straddles the right ventricle, without the blood first passing through any other channel, the movement of the blood will be the same from the right ventricle out into both arteries.

As to the cause of this phenomenon, I have nothing to say. But, supposing that in the open thorax the pulmonary artery separates from the aorta, while in the closed thorax it receives the blood from the right ventricle and permits it to pass on to the aorta. There still remain two perplexities. It cannot be taken for granted that the arterial structure will remain the same when the thorax is open. But even though this

was proved, it would still remain obscure how an open thorax would contribute to a change in the arterial structure. There can be no doubt that the ductus arteriosus found in infants gradually resolves itself into a ligament as the lungs expand with the establishment of respiration, and that this structure is patent only in the fetus, because all the blood coming from the right ventricle cannot pass through the pulmonary arteries. But why the blood in this case has not been able even to make its way into the pulmonary artery, but has made its way directly into the aorta, I am unable to explain. Still, no matter what the reason of this might be, I take it plainly to prove the wisdom of Nature, in as much as the effect is produced, if not in the same way, yet always somehow.

Just as this fetus proves this point with regard to that part of the blood that has to be expelled from the right ventricle in the large artery [aorta], this fetus also illustrates that the formation of the solid parts of animals does not always proceed in the same manner even though the effect obtained remains the same (32).

It was in *Acta* also that Thomas' son, Caspar, wrote to his father that he had, in 1674, visited "a talented but untutored Dutchman", van Leeuwenhoek, who had shown him red blood cells in one of his microscopes!

*Acta* was an international feat which was not re-introduced into Denmark until about 75 years later — and then unsuccessfully (4). Thomas Bartholin died in 1680 and in the following decades, Danish and Norwegian physicians had to have their observations published elsewhere. Many manuscripts such as theses and books were printed in Denmark but other works had to be sent to foreign periodicals. *Miscellanea curiosa* and the monthly journal which appeared in 1697—1708, *Nova literaria Maris Baltici Septentrionis*, issued from Lübeck to cover the Northern countries (Septentrionis = the constellation of the Great Bear or Plough) accepted works on pleuritis and peripneumonia by Johannes de Buchwald (1658—1738) who had been educated as a barber and who became, in 1700, Doctor of Medicine, Physician-in-Charge of the Accident Infirmary ("Kvaesthuset") and in 1717 Professor of Medicine. Other articles which appeared in this Journal concerned the effect of Brazilian tobacco on prolonging life (by Georg Frank de Frankenau (1674—1704) who was the court physician to King Christian V) and similar topics by other authors (R. Wagner, J. Hahn, M. Haquart). *Nova literaria* was also concerned with information from the universities, literary news, book reviews and was a precursor of Steele's "The Tatler" (1709) and Addison's "The Spectator" which were literary weekly journals giving pleasure and information also to non-academic individuals.

#### THE EIGHTEENTH CENTURY

In the beginning of the century a battle raged between the learned physicians and the uneduca-



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ted surgeons but time favoured the latter and their contribution in epidemics and in the army and navy made them respected and wealthy so that they could gradually gain equality with the physicians and win admission to the universities (13).

The increasing wealth and democracy brought a desire for knowledge and popularization. In Denmark in addition to "*Den københavnske Post-rytter*" (The Copenhagen Post Courier) another Danish weekly journal appeared from 1720 to 1836: *Nye Tidender om lærde Sager* (News periodical concerning) with reports and reviews (28). The use of their own language began to find favour also among scientists. Increasing national feelings defeated the Latin of the learned, unfortunately, as it was common principal language.

In 1742 the *Kongelige Danske Videnskabernes Selskab* (Royal Danish Society of Science) was inaugurated and from 1743 this society issued "*Papers which are presented and read in the Copenhagen Society of Patrons of Wisdom and Science*". In this periodical, physicians such as the famous mathematician and astronomer Peder Horrebow (1679—1764), the anatomist Georg Detharding (1671—1767), the professor in experimental physics and medicine, Christian G. Kratzenstein (1723—1795) and several others (Friis Rottbøll, Theodor Holmskjöld) had their works published. Kratzenstein was an extremely industrious man and he was so clever in his experiments with electricity that no one dared rent him a lodging in Copenhagen when he came there in 1753. It was feared that "his electrical arrangements would attract lightning to the house".

Not until 1753 did the Collegium Medicum attempt to revive *Acta Medica*. A pompous volume was issued (it was to be the only volume): "*Prodromus praevertens continuata Acta medica Havniensia*" containing articles on twin monsters, gall stones passed per vias naturales, the history of crural hernia, all of negligible value.

In Paris C. Brunet issued a weekly journal "*Progrès de la médecine*" from 1695 which continued until 1709 and from 1724—26 the first weekly German medical journal "*Der patriotische Medicus*" was issued from Hamburg which was a spiritual centre (12). Simultaneously with the economic progress the interest of the middle class in the progress of science and its practical employment increased (2, 15, 21), and 1759—64, J. A. Unzer issued "*Der Arzt — Eine medicinische Wochenschrift*". On the basis of the conceptions at that time of encyclopaediae (Diderot's encyclopaedia was issued 1751—65) (21), the object of this weekly was to explain the human organism and its functions both in health and disease for laymen. Unzer was a gifted physician with a flourishing practice. This is known among other sources from the physician Struensee, who was executed as Minister of State of Denmark in

1772 and who in great jealousy and without success in 1763 attempted to copy "Der Arzt" in a periodical "*Monatschrift zum Nutzen und Vergnügen*" (27).

# Lægen, et Medicinsk Ugeſkrift,

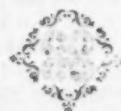
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den

Andet Oplag,

den 1. Qvartel i Aaret 1766 at udgives.

Fjerde Deel.



København, 1766.

Trykt hos Bødderne Johan Chriſtian og Georg Theſſſſen  
Børling.

Fig. 4.

As the first popular medical periodical in the Danish language the physician Niels Friberg issued the second edition of "*Der Arzt*" as a translation (Figure 4). This translation was a great success in Denmark also, while Struensee's little paper had to give up after the sixth issue despite alteration of the name to "*Zur Belustigung*". The latter had been rather impertinent concerning Unzer and his work too.

During the subsequent decades several similar popular periodicals appeared, but a cutting from Unzer's weekly gives a good impression of the educative reading at that time. Unzer regarded the human organism as a machine and explained its functions by answering "letters" from "Oluf Wondering", "Lazarus Sad", "the industrious reader Modestine Spinster Pipsch" and, as quoted below, from "Urban Flatus".

"Retention of wind is a curious form of constipation with which individuals who sit a great deal are particularly afflicted. I have here a letter to publish and answer which is sent me from a gentleman afflicted with wind and I shall take the opportunity of reporting factors which should be observed when the discharge of surplus is to be controlled. The letter which I have received reads thus:

My dear Doctor,

Can you do nothing for the blasted wind? I am a man who could spend my days respectfully together with my family if we were not all practically continually afflicted with wind. When my wife, three daughters and I have drunk tea in the morning we all go to our work. I sit at my window where I watch the passers-by, my wife to the window just opposite mine where she has her sewing frame and my three daughters to their sewing frames in the centre of the room. We have scarcely sat down before a rumbling commences in the room as if a Jewish school was in session. Now my wife asks "What did you say, my dear?" and now I ask her "I beg you pardon!" And the answer is always the same: "Nothing. It was wind". My daughter Louise has frequently such a rumbling in her belly as if in a curiosity-cupboard or chest a battle was enacted. The youngest daughter's belly makes a howling noise as if she carried a pond full of old frogs around with her and in the belly of my second daughter a chirping as of young birds can be heard. We are frequently deafened by the noise we make when we are sitting still. Has nature no remedy for this curse or are you not, dear Sir, an Aeolus who with a: *Quos ego!* can silence our wind? We are ashamed to come to gatherings as when we sit in all respect and dignity and discuss the most serious subjects then our bellies without our knowledge can make such clear noises that the entire gathering must bite their tongues to avoid laughing outright. We fear nothing so much as that universal silence which may often last for a few minutes in the most lively company when a discussion is concluded as then most frequently our abdominal language begins and my daughters colour as if they had committed a crime. I beseech you to help us from this familial affliction or at least tell us, as you will not write prescriptions, what the cause of this affliction is and how we can silence our bellies. I remain

Your humble servant,

Urban Flatus."

Unzer's advice was "temperance in eating, wind-repelling substances such as strengthening wine which does not cause excitement, digestive salt (nitrate), tincture of rhubarb, smoking tobacco" and ample exercise. Concerning Mr. Flatus' "abuse of tea-drinking" Unzer says: "It is scarcely surprising that he and his family develop stomachs like drums as, in addition to the unnatural position of their abdomen which impedes the movements of the gut and the entire process of digestion, they fill their stomachs with hot water twice daily, this being the most convenient manner of making the stomach and the membranes of the gut lax and weak. In this way the intestine is also robbed of the little remaining strength it possessed on account of the poor bodily posture".

The lively literary activity made itself also marked in extensive reference works which began to appear (Haller's *Göttingische Zeitungen von Gelehrten Sachen etc.*) (12).

In other ways also, physicians began to take an interest in the ordinary welfare: several went out into practical life (agriculture, mining, pottery industry) and in scientific journals articles concerning e.g., the significance of clay in agriculture (Johan Erichsen), isolation and inoculation of cattle (Struensee) (27) and the areal determinations of parcels of land; this last was accepted from Oeder in "*Almennyttige Samlinger til Hjerte forbedring og Kundskabernes Udbredelse*" (Generally usefull collections for the improvements of the heart and the distribution of knowledge!) — a typical title of a periodical of that time (1781) (6).

#### MEDICAL SOCIETIES

A new era developed in Denmark from about 1770. A whirlwind passed throughout the country with Johan Friedrich Struensee (1737—72) as physician, reformer (27) and dictator. In the course of 16 months, as Geheime Cabinet Minister in 1770—72, he issued approximately 600 directives which, *inter alia*, influenced the functions of the Superior Department of Health and the Board of Health for Copenhagen (quarantine, burials, poor law, etc.). He also attempted to concentrate the education of physicians and surgeons in the *Royal Frederik's Hospital* (see Figure 5, the present Museum for Arts and Crafts) which was inaugurated in 1757. This plan was not realized until approximately 50 years later.

During the subsequent decades a number of brilliant physicians appeared led by Johan Clemens Tode (1736—1805), Heinrich Callisen (1740—1804), Matthias Saxtorph (1740—1800), Frederik L. Bang (1747—1820), Peter C. Abildgaard (1740—1801). While Callisen and Saxtorph as surgeon and obstetrician, respectively, rapidly gained European fame, Tode played the part of organiser and teacher for both learned and laymen in Denmark. From modest social conditions Tode had fought his way forward via surgery to a professorship of medicine (1776). He studied in Leyden, Edinburgh, London, Paris and elsewhere. In Edinburgh, Cullen's clinical teaching had made a particularly deep impression upon him and in 1771, together with Callisen, he inaugurated "*Det kirurgiske Privatselskab*" (The Private Surgical Society) which existed for 12 years. This society was modelled upon *The Royal Medical Society of Edinburgh* (14) founded by Scottish students in 1737. Just as in the "*Gelehrte Journalgesellschaft für Arzneykunde, Oeconomie und Naturgeschichte*" founded by the Berlin physician Friedrich Martini in 1764 (1), meetings, readings and a library were considered essential in this connection. In the reading room

# ACTA REGIÆ SOCIETATIS MEDICÆ HAUNIENSIS.



VOLUMEN I

HAUNIÆ  
EXCUBAT NICOLAUS MÖLLER,  
AULÆ TYPOGRAPHUS,  
MDCCLXXXIII

Fig. 5.

of the Danish Society were available the periodical by A. G. Richter, "*Chirurgische Bibliotek*", accounts from Academie des Sciences in Paris, from the Royal Medical Society of Edinburgh and books by Haller, Tissot, Pott, Acrel and Boerhaave's aphorisms with Swieten's commentaries (19).

In 1772 Tode together with Abildgaard, Callisen, Saxtorph and others founded *Societas Medica Havnensis* which in 1782 "was granted the designation Regia". This medical society in Copenhagen which held its first meeting on October 11, 1772, is the oldest European scientific society founded by physicians (*The Medical Society of London* dates from 1773). The society is still in existence as "Medicinsk Selskab" and has always been open both to physicians and surgeons; after destruction of the Society's building by Nazis during the Second World War it has been housed in Plessen's Palace which also houses the host for the 12th General Assembly of the W. M. A.: "Den almindelige danske Lægeforening" (The Danish Medical Association), established as professional society in 1857 (7).

In addition to these two societies, Tode founded a society for the benefit of students and newly-qualified physicians in 1774, "*Det københavnske medicinske Øvelsesselskab*" (*Societas exercitatoria medica*).

Following the meetings during the years 1744—1803 a series of communications were issued by the Medical Society. First appeared two volumes,

*Collectanea*, 1774—75, containing, *inter alia*, articles by Abildgaard on the negligible effects of willow roots in rickets, by Schoenhayder on cancer coli et labii viri cured by aceti lythargyri, on syphilis in children by Callisen, on hydrophobia caused by dog bite and on apoplexy cured by blood letting by Tode. Thereafter, two volumes of *Acta* appeared (1777—79) containing, among others, articles by F. L. Bang on periodic icterus, Callisen on lethal hernias, de Meza (1756—1844) on malignant scarlatina and on mors ex imaginatione (in which even tobacco enema did not help!). 1783—1803 four volumes of *Acta Regia* appeared and contained, among other articles, F. L. Bang's splendid *Selecta diarii* from Frederiks Hospital (Figure 5).

Not only did Tode lead these societies and university teaching but he published, in addition, medico-special, medico-aesthetic and aesthetic works. Among the first are his 10 volumes of *Medicinischchirurgische Bibliothek* (1774—87) which with the motto from Pope: "Pleas'd to commend yet not afraid to blame" (see Figure 6) as a starting point gives excellent lively impressions from European medical science. In 1787—92 appeared *Arzneykundige Annalen* in 13 issues and in 1793—1804 *Medicinisches Journal* in 5 vol.

From 1778 till 1780 Tode issued a long series of health journals (medico-aesthetic works) in Danish in which he found his real vocation as a missionary for health. By "swinging the whip of satire" Tode strove to improve personal hygiene which was poor at that time. He fought for bath-

## Medicinischchirurgische Bibliothek,

von

Johann Clemens Tode,

der Arzneigelahrtheit Doctor und öffentlichen  
Lehrer an der Universität zu Kopenhagen, wirklichem  
königlichen Hofmedicus, beßstem Aetre an der  
Pöbgeantstalt, dem Erziehungsbauße und übrigen  
Schpfilken auf Chrestiansabaven, Mitre des  
königlichen Collegii medicæ und der medicinischen  
Gesellschaft, auch Mitverordnere der chirurgischen  
Gesellschaft zu Kopenhagen.

Pleas'd to commend, yet not afraid to blame.

POPE

Erster Band.

Kopenhagen, 1775.

in der Joh. Gottlob Rothenschen Hof- und  
Universitäts-Buchhandlung.

Fig. 6.

ing establishments, fresh air, he welcomed "cross-roads as delightfull ventilators", he expressed his opinion concerning the injurious effect of high heels, tight lacing and night caps and he wrote about "love regarded as a disease" and measures of rescuing the drowning.

Finally, he wrote novels and poems.

During the last decades of the 18th century, problems of politics and economy developed in a spirit of national conscience and involved, in addition, the medical profession (27, 28). In 1794—1806 the first special medical periodical in Danish was issued by Ole H. Mynster (1772—1818) who later became the Physician-in-Charge of Frederiks Hospital. The periodical was named "*Physikalsk, oeconomisk og medicochirurgisk Bibliothek*" (Figure 7) and it contained, in addition, veterinary, agricultural and clinical articles. There were articles on crushed or smoked bones as human food ("good for all healthy individuals"), a sharp attack on the Surgical Academy and in the 17th volume (1800) veterinary professor Erik Viborg's reviews of Jenner and Pearson's pamphlets on cow-pox inoculation. The observations made in 1790 by Peter Plett, a school teacher from Holstein, born in Schleswig, and his experiments with cow-pox inoculation in 1792, 4 years before Jenner's publications were however, not mentioned despite a report to Kiel University which was otherwise literally closely associated with Denmark (24).

In 1799 "*Nordisches Archiv für Natur und Artheywissenschaft*" commenced. This periodical

Physikalsk, oeconomisk  
og  
medicochirurgisk  
**Bibliothek**  
for Danmark og Norge.

Januari Maaned 1794.

En forløst Patient-Cur med Succes af  
Niels: Plett, hies Mandtjenest — reddet  
fra Hørgaards, af Hørgaards, Drigons  
Gang.

Paulus habere aliquod remedium moderatum cum se-  
curitate, quam in se cum periculo maximo.  
THOM. FRANKS.

**S**noten Cur. Metoden Ward er absolut. Det  
er ofte bemærket, at en skraa-lig Operation har  
været Læge, antaget og under hele Tårhundrede,  
og at den desuagtet ikke er bleven tilføjet, for  
fæstet, glæde. — Den Operation, som enten als  
delet ifte, eller kun holdt i den Hænder der Gavn,  
man foretoges af den: den, hvis Ward er gavn-  
det som uragte Korudfæstelse, var i alle, endige  
tede Erfaringer, eller som blot Ant. riet; den,  
som er haard og g. u. som, har meget ubehagelige  
Følger, eller er besværlig at foretage. — alle disse  
maaske ikke for andre, ved hvilke den præcise Gavn  
kan opnaas det tilføjede Remedium som en kemisch

Fig. 7.

**Bibliothek for Læger**

udgivet

af

Directionen for det Classenske  
Literaturselskab.

Første Bind.

Med 3 Kobber.

Siobenhavn.

Trykt og forlagt hos Andreas Seidelin.

1809.

Fig. 8.

was edited by the Medical Officer of Health in Copenhagen, P. Scheel, and professor C. H. Pfaff in Kiel, but only survived for 7—8 years despite the close relationship between Denmark and Kiel mentioned above.

THE NINETEENTH CENTURY

*The Edinburgh Medical and Surgical Journal* has been issued since 1805 and is still being published. It commenced originally as "Medical Essays and Observations" in 1731 and has continued since then with changing titles (12, 14).

The Danish "*Bibliothek for Læger*" (Medical Library) (Figure 8), was issued in 1809 and is thus the second oldest existing medical journal in the world. The "*New England Journal of Medicine and Surgery*" from Boston was commenced in 1812 and is the third oldest. National feeling everywhere replaced the Latin of the learned and scientific journals have been issued in the vernacular since then as a bad result.

"*Bibliothek for Læger*" did not remain the only Danish special medical journal in the 19th century. Other journals appeared but did not last so long. During the years about 1830—40 published "*Bibliothek for Læger*" lost ground as there was a demand for no more rapid information than a quarterly journal could give (22). In 1839 it became a monthly journal and in the same year "*Ugeskrift for Læger*" (Weekly Medical Journal) commenced. In 1848 "*Hospitalsmeddelelser*" (Hospital Reports) appeared and continued in 1858



as the weekly "*Hospitalstidende*" (Hospital Journal). While *Ugeskrift* gradually became the official organ of *Den almindelige danske Lægeforening* (Danish Medical Association) (23), "*Hospitalstidende*" attempted to present "Records of practical medical knowledge from Denmark and abroad" (27). Danish winners of the Nobel prize such as Finsen and Fibiger, for example, published their experiments in "*Hospitalstidende*".

"*Bibliothek for Læger*" would not have been the second oldest medical journal if the Danish Medical Association had not offered economical assistance in 1955 (7). It now contains monographs and extensive articles and thereby plays an important rôle in the Danish medical periodic literature.

With "*Acta Medica & Philosophica Hafniensia*" and "*Bibliotek for Læger*" Denmark assumes a prominent position in the ranks of medical journals.

Another Danish contribution of international value should be mentioned here: Next to von Haller's *Bibliothecae Chirurgica, Anatomica et Medicinæ Practicae* a Dane, Adolph C. P. Callisen (1786—1886) and an American, John S. Billings, performed the most outstanding cataloguing of medical books and journals (9). In 1843 Callisen retired to Altona after 30 years' service as a regimental surgeon and later as professor of surgery and there completed "*Medicinisches Schriftsteller-Lexicon*" which appeared in 33 volumes from 1830—45. These volumes cover with the greatest accuracy the literature from 1780 till 1824 (44). Comprehensive bibliographic data are given with cross-references and even prices where this was possible. Haller's *Bibliothecae*, Callisen's *Lexicon* and Billings' *Index-Catalogue* are monuments over the contribution of the last poly-historians and cannot be too highly praised.

On this occasion it should not be forgotten that the very first weekly newspaper "*La Gazette de France*" was created and issued in 1631 by a physician Théophraste Renaudot (1586—1653). When the myriads of medical journals during the past 400 years and the number today are considered, the truth of Renaudot's words will be appreciated:

"Le Journal tient de la nature des torrents, qu'il se grossit par la resistance".

#### References:

- 1) Artelt, W.: Die medicinischen Lesegesellschaften in Deutschland. *Sudhoffs Archiv* 1953, 37: 195—200.
- 2) Bruun, W. v.: Von der Entwicklung des deutschen medizinischen Zeitschriftwesens. *Deutsch. Med.W.-schr.* 1925, 51: 1077—78.
- 3) Buess, H.: Der Beitrag der Schweizer Ärzte zu den "Miscellanea curiosa" der Deutschen Akademie der Naturforscher. *Sudhoffs Archiv* 1953, 37: 1—22.
- 4) Carøe, K.: Danske medicinske Tidsskrifter. Fortid og Nutid. *Dansk Klinik*. 1909, 1: 3—11.
- 5) Cole, F. J.: A History of Comparative Anatomy. London 1944.
- 6) Ehrencron-Müller, H.: Forfatterlexicon omfattende Danmark, Norge og Island indtil 1814, Kbhvn. 1924.
- 7) Fenger, V. A.: Den almindelige danske Lægeforening 1857—1957. Kbhvn. 1957.
- 8) Friis, F. R.: Tychonis Braheii et ad eum Doctorum virorum Epistolae. Hauniae 1886.
- 9) Fulton, John F.: The Great Medical Bibliographers. Philadelphia 1951.
- 10) Garboe, A.: Enhjørningen. Kbhvn. 1915.
- 11) Garboe, A.: Thomas Bartholin I—II. Kbhvn. 1950. (English Summary).
- 12) Garrison, F. H.: The Medical and Scientific Periodicals of the 17th and 18th Centuries. *Bull. Instit. Hist. Med.* 1934, 2: 285—343.
- 13) Gotfredsen, E.: The Development of Medicine in Denmark since the Foundation of the University of Copenhagen in 1479. *Danish Medical Bulletin* 1957, 4: 170—79.
- 14) Guthrie, D.: A History of Medicine. London 1945.
- 15) Hall, A. R.: The Scientific Revolution 1500—1800, The Formation of the Modern Scientific Attitude. London 1954.
- 16) Haderup, V.: Lidt om Johan Clemens Tode. *Hospitalstidende* 1892, 3 Rk.: 64—79.
- 17) Høeg, E.: Licent. med. J. V. Wille. Kbhvn. 1934.
- 18) Ingerslev, V.: Danmarks Læger og Lægevesen fra de ældste Tider indtil Aar 1800. I—II. Kbhvn. 1873.
- 19) Johnsson, J. W. S.: Københavnske medicinske Selskaber. *Festskrift*. Kbhvn. 1922. (French Sum. in: *Janus* 1922, 26: 353—62).
- 20) Jørgensen, S. M.: Om Iltens Opdagelse. *Kgl. Danske Videnskab. Selskab. Skrifter* 7. Rk. Naturvidensk. og math. Afdl. IV. 212—13, København 1907.
- 21) Nicolet, André: Encyklopædier og Konversationslexica gennem Tiderne. Kbhvn. 1946.
- 22) Petersen, Jul.: *Bibliothek for Læger i 100 Aar 1809—1908*. *Bibliothek for Læger* 1908, 8. Rk.: IX: 1—54.
- 23) Petersen, Jul.: *Ugeskrift for Læger: 1839—1889*. *Ugeskrift for Læger* 1889, 4. Rk. XIX: 485—534.
- 24) Rich, Ida: *Koppernes Historie gennem Tiderne*. *Tidsskrift for Sygeplejersker*, Oct. 1954.
- 25) Schmiegelow, E.: Johan Clemens Tode. Kbhv. 1941.
- 26) Scudder, Samuel H.: *Catalogue of Scientific Serials of all countries including the Transactions of learned Societies in the Natural, Physical and Mathematical Sciences. 1633—1876* Harvard Univ. Cambridge 1879 pg. 36—46. Denmark-Sweden.
- 27) Snorrason, E.: Struense's medicinsk-litterære Virksomhed. *Fund og Forskning*. Kgl. Bibliotheks Samlinger III: 1956, 62—78. (English Summary).
- 28) Stolpe, P. M.: *Dagspressen i Danmark. I—IV*. Kbhvn. 1878—82.
- 29) Sudhoff, K.: *Münch. Med. W.schr.* 1903, 50: 455—63.
- 30) Thornton, J. L.: *Medical Books, Libraries and Collectors*. London 1949.
- 31) Warburg, E.: Subacute and chronic pericardial and myocardial lesions due to non-penetrating traumatic injuries. Copenhagen 1938.
- 32) Warburg, E.: Niels Steensens Beskrivelse af det første publicerede Tilfælde af "Fallot's Tetrade". *Nord. Med.* 1942, 16: 3350—51 (English translation quoted here in: Willius, F. A.: *Proc. Staff. Meet. Mayo Clinic*. 1948, 23: 319—20).

## THE TREATMENT OF ALCOHOLICS

### EXPERIENCE WITH THE RECOMMENDATIONS OF THE W.H.O. SUBCOMMITTEE ON ALCOHOLISM

By ALF YDE & IB VENGE

The WHO Subcommittee on Alcoholism has demonstrated that the treatment of alcoholics will make no progress whatsoever and will create confusion of terms in a country if the prophylactic study and arrangements be mixed up with the authorities and institutions concerned with the treatment of alcoholism.

It is of fundamental significance that the health authorities in the various countries accept the advice of WHO that the treatment of alcoholics is a medical problem while the combat of alcoholism is a socio-political concern.

The prophylactic considerations and studies are far more complicated in a community than was primarily imagined and where alcoholism is concerned, may be regarded as being in the primary stage.

The majority of physicians are probably tired of learning that the annual consumption of alcohol in a country amounts to so many litres or tons of alcohol, as this expression does not give any impression of the extent of alcoholism in that country. The amount of petrol employed gives no indication of the number of traffic accidents in a country. The traffic authorities study the traffic accidents from every angle but do not concern themselves with the treatment of those injured, which is considered a domain for the medical and hospital authorities of the country.

The combat of tuberculosis is undertaken on principles which have very little in common with the actual treatment of tuberculosis.

As the medical profession has become increasingly interested in the study and treatment of alcoholism, particularly after the introduction of disulphiram ("Antabuse"), it appears very important to emphasize the guiding principles proposed by WHO, the national characteristics of the respective countries being, naturally, taken into due consideration.

It is, however, just as important that WHO maintains the same clear and simple view point in future, at this will facilitate the work considerably in the attempts to investigate the most effective methods of treatment of the syndrome of alcoholism.

The hospital authorities of the Municipality of Copenhagen who are responsible for a population of 750,000 have attempted, since spring 1953, to treat alcoholism on purely medical principles. In

our experience, the study and treatment must be undertaken according to these principles, which strongly emphasize the correctness of the therapeutic considerations, inter alia, propounded in reports of the WHO Subcommittee on Alcoholism.

It is maintained that, in principle, alcoholism can be treated on an out-patient basis provided that a suitable therapeutic organization is established with this object in view.

It is also recognized that alcoholism is a "socio-medical syndrome" and, consequently, an effective organization for follow-up care extending over 2—3 years with the assistance of social workers must be established.

In the spring of 1953 the Hospital Authorities of the Municipality of Copenhagen inaugurated an out-patient clinic for alcoholics and, in connection with this, a sanatorium for alcoholics ("Overførstergården") in Jægersborg approximately 6 miles from the centre of the city, with accommodation for 37 male alcoholics.

It must be emphasized that the new principles of treatment could never have been accomplished if the psychiatric admission departments had failed to co-operate by taking in the acute cases, *i. e.* actual or threatened dipsomania or other severe psycho-pathological conditions. It should, however, be borne in mind that the out-patient clinic is the central place of treatment and the sanatorium for alcoholics is a branch of this. The out-patient clinic and the sanatorium for alcoholics, "Overførstergården", constitute one functional unit and the sanatorium is run according to hospital principles and thus recognized by the Danish Hospital Board.

The consulting hours of the out-patient clinic are from 2 till 4 p. m. on 4 week days and from 3.30 till 5.30 on the remaining 2 week days (Mondays and Fridays). The out-patient clinic is a "closed clinic", *i. e.* patients cannot come in directly "from the street" but only on recommendation from a practitioner, hospital department, social bureau, child welfare or maternity authority, a physician assisting Alcoholics Anonymous, a police welfare authority or similar institutions rendering assistance to alcoholics.

The out-patient clinic and "Overførstergården" have the following personnel in common: one senior physician, one first assistant, five social workers, and one clinical psychologist.

The out-patient clinic is further staffed by: two assistant physicians, one nurse and two medical secretaries.

"Overførstergården" is led by: one ward master

From The Copenhagen Municipal Clinic for Alcoholics and The Sanatorium for Alcoholics "Overførstergården" (Head: A. Yde).

with the following assistance: two male nurses, one housekeeper, one nurse, employed for 4 hours daily, and one medical secretary.

Patients are referred to "Overførstergården" via the out-patient clinic. Alcoholic patients who have been admitted to psychiatric departments are transferred to "Overførstergården" when the acute phase is over, or may be discharged for continued treatment in the out-patient clinic.

No less than 50 per cent of alcoholics suffer from various somatic conditions requiring treatment and control, and it is therefore of great importance that the out-patient clinic and "Overførstergården" have access to the various out-patient clinics of the municipal hospitals and the dispensaries for tuberculosis. The treatment of alcoholics would be completely impossible had not this considerable help from the somatic departments of the hospitals been available.

The procedure in the out-patient clinic is such that the social workers take turns in admitting a new patient who is, in future, taken care of by the same social worker who began with the patient's social history. The somatic and psychiatric histories are then taken by physicians, after which the socio-medical directives for therapy are established etc. All available medical and psychiatric therapy is employed and when a certain balance in the patient's personal and economic situation has been established, the continued therapy is delegated to the social worker who must support the patient for months or years but who can, at any time, refer the patient to the physicians.

On Dec. 31, 1956 a review was undertaken to illustrate in how many cases out-patient treatment alone was instituted and how many patients required preliminary hospitalization.

From April 10, 1953 till Dec. 31, 1956, 2,600 patients had been referred and of these 1,700 were submitted to treatment according to the system employed principally, *viz.*, association with a social worker and the usual consultations with physicians.

By Dec. 31, 1956, 600 patients were still in contact with the clinic:

Of these, 46.1 per cent had been admitted to "Overførstergården" (with or without preliminary admission to a psychiatric department).

Fifteen per cent were admitted to the psychiatric department or to a mental hospital (Sct. Hans Hospital, Roskilde) without admission to "Overførstergården".

One and a half per cent were admitted to special homes for alcoholics without admission to psychiatric departments or "Overførstergården".

37.4 per cent were treated entirely as out-patients, *i.e.*, not hospitalized during the period in which they were in contact with the out-patient clinic.

In connection with the above it may be repeated that 2,060 patients were referred to the out-patient

clinic since its inauguration, but that only 1,700 were treated according to the principles laid down, while the remaining 900 patients were treated by various physicians and without association with social workers. A number of the patients probably refused to accept the conditions for treatment and, finally, a number were hospitalized and have not since resumed contact with the out-patient department.

On account of the nature of the problem, the out-patient clinic of the hospital authorities must necessarily deal with the "hard core", while the slight and moderate cases may be dealt with by Alcoholics Anonymous ("Ring i Ring") and the clinics of Temperance Societies without admission.

The patients who were admitted to "Overførstergården" remained there for an average of 42—45 days.

When a patient is admitted to "Overførstergården", the physicians, social workers and other personnel immediately commence to evaluate the patient's personal, somatic and economic position. This takes, as a rule, 1—2 weeks, during which the form of therapy required by the particular case is also planned.

It should be emphasized that the patient in "Overførstergården" is attached to the social worker with whom he started in the out-patient clinic. The patient does not change from one social worker to another and particular stress is laid on continuity. For this reason both the out-patient clinic and "Overførstergården" employ the same type of case history sheets which follow the patient when he is discharged for treatment in the out-patient clinic.

Great administrative difficulties have been caused by the fact that in the latter part of the stay in the sanatorium the patients recommence their usual work but return to "Overførstergården" after work. These difficulties, however, are more than outweighed by the invaluable therapeutic factor, *viz.*, that the patients are permitted to keep the money they earn. It should, however, be noted that the use of this money is under the control of the ward master and the social workers who can, by means of a so-called budget scheme, review the patient's economic situation fairly clearly. In this connection, it may be recorded that the patients cared for in "Overførstergården" in the course of the 4 years which have elapsed have been employed for 9,800 working days in ordinary jobs, resulting in earnings amounting to approximately  $\frac{1}{4}$  million Danish crowns (approximately £ 12,500).

As a result of these earnings, patients are enabled to pay for new lodgings on discharge, arrange their tax payments, payments to trade unions, insurance, hire purchase etc., so that a reasonable economic basis is established on discharge and attempts are made to maintain and consolidate this stable economy during the very

important follow-up treatment in the out-patient clinic.

Routine medical co-operation exists between this organization and the out-patient clinic established by Alcoholics Anonymous and the out-patient clinic established by the Danish Temperance Societies in Copenhagen. All three out-patient clinics employ, for example, the same type of case history sheet and work according to purely medical principles.

The Danish Temperance Society ("Blue Cross") has modernized its home in Tåstrup near Copenhagen. This home, with accommodation for 20 patients, is run according to exactly the same principles as those employed by the Hospital Authorities of Copenhagen.

"Blue Cross" has another home for 40 patients in Ørsholt in North Zealand mainly for prolonged treatment of chronic alcoholics who may during the course of treatment be transferred to the home in Tåstrup which is approximately 9½ miles from the centre of Copenhagen.

Finally, it should be noted that centres for treatment of alcoholism are established in the various larger towns in Denmark. In order that the therapeutic principles be as uniform as possible throughout the country, the physicians concerned have formed a "Society for the Treatment of Alcoholics" concerned solely with the scientific medical problems involved in alcoholism and its treatment.

It holds true for alcoholism as for other diseases and syndromes that relapses occur repeatedly, but if the patient is sufficiently well known, relapse will not invariably necessitate admission.

The figures from "Overførstergården" may be used as an example of the percentage of re-admission: 73 per cent were admitted once, 20 per

cent twice, 5 per cent were admitted thrice and 2 per cent were admitted four or five times.

During the first three years in the out-patient clinic, 2,010 new patients sought advice and of these 1,312 were submitted to treatment according to the system outlined above with permanent association with a social worker and physician. Concerning these 1,312 patients, routine accounts were registered every second month and at the time of the review of March 1, 1956, contact has been maintained with 37 per cent.

The results obtained from the treatment were: improved: 38 per cent; unchanged: 28 per cent; no information: 34 per cent. The out-patient clinics in Ålborg and Århus in Jutland have achieved, during the years, somewhat better results, the groups "improved" being about 50 per cent.

The term "improved" has hitherto been taken to mean that the patient has greatly reduced or stopped consumption of alcohol and that the patient is psychically stabilized, fit for work, economically independent and progressing socially.

It must be emphasized, finally, that the treatment of alcoholics in future should be a purely medical question and be delegated to the hospital authorities. Possibilities for further research concerning biochemical and electro-physiological phenomena involved in alcoholism will not be available until the question is elucidated by means of clinical research.

Hitherto, the only clinical pictures dealt with are those of the terminal stages of alcoholism and, for this reason, nothing revolutionary can be anticipated in this field. Progress may, however, be made concerning the groups of patients in which the defective stage has not yet been reached.

## RECOVERY FROM ALCOHOLISM BY TREATMENT WITH ANTABUSE COMBINED WITH SOCIAL AND PERSONAL COUNSELLING

### A STATISTICAL CALCULATION OF THE PROGNOSIS IN DIFFERENT SOCIAL GROUPS

By KIRSTEN RUDFELD, M.A.(econ.).

This account attempts, on the basis of a limited number of social factors effective at the date of attendance, to predict the results achieved in persons receiving ambulant treatment at a clinic for alcoholism, to determine the probability of good, poor or doubtful results of the treatment, and to give an account of possible limitations in the efficiency of such a prediction (1).

The calculations are made on the basis of case records and other information concerning patients treated at the Antabuse Center of the pro-

vincial town of Ålborg during the period 1/10 1951—31/12 1954, and have been checked as far as possible on another case material — the patients treated at the clinic of the Danish Temperance Societies, in Copenhagen.

The treatment of alcoholism by the use of Antabuse (disulfiram) was started in Ålborg in September 1950. The treatment is partly medical, partly in the form of counselling with respect to social problems. The amount of disulfiram taken is closely controlled.



An account of the work has previously been given together with certain of the results obtained (2).

The material for the prediction calculations made here consists of all patients who underwent treatment at the clinic in Aalborg during the period mentioned, 339 men and 13 women, in all 352 patients, but only the material from the cases of 333 patients was suitable for working up.

The results of the treatment are measured as those *changes which have taken place in the abuse of alcohol by the patients and in their social circumstances from the start of the treatment till the time of assessment.*

The shortest period of observation (including the period of treatment) is 17–24 months and the longest 48–57 months, and there does not appear to be any correlation between the period of observation and the results. This might be interpreted as signifying that when a treatment has been carried through successfully, and a period of about 1½ years has elapsed since the start of the treatment without a major relapse occurring, the chance of relapse should be quite slight.

The following groups and criteria have been used in classifying the results:

**A. Good results.** Complete resocialization. No or normal consumption of alcohol; in the event of any purely isolated incidents of drunkenness, contact with the organization has not been necessary .... 168 patients (50 per cent).

**B. Doubtful results.** Definite improvement, or considerable resocialization. There have, however, been occasional relapses to the abuse of alcohol. Contact has been necessary with the organization in cases of relapse, so that the patient could come on his feet again ..... 58 patients (17 per cent).

**C. Poor results.** Generally, nothing achieved, possibly after transient improvement. At best, continued contact with the organization is essential. Unstable resocialization. Frequent relapses ..... 108 patients (32 per cent).

From the information available before the calculation of the prediction was made, it appeared that there was an association (3) between the results of the treatment and the following circumstances of the patients as they were effective on the date of attendance:

1) Age, 2) marital status, 3) training or skills, 4) employment, 5) housing accommodation, 6) type of intoxicant used and 7) source of initiative for the patient's attendance for treatment. The seven factors specified must be assumed to be strongly interdependent. Thus, a closer analysis appears to show that the association existing between a positive result of treatment and vocational training did not have independent significance. There was more unemployment among the unskilled workers than among the skilled, and

it was this difference that was reflected in the tables.

With regard to the remaining factors, the following may be noted:

**Age on the date of attendance.** The following 4 age groups were coded: Under 25 years of age, 25–34 years of age, 35–44 years of age, 45 years of age and over. The tables showed that the possibilities of recovery at all stages increased with increasing age. Doubt was felt in advance that age should be a factor of independent significance for the prognosis, and a positive explanation for the results found on this point cannot be reached. However, whatever the explanation may be, it is nevertheless a fact that age is an important prediction factor.

In the present investigation, where dichotomy has been carried out for all criteria, all persons under 35 years of age have received the point value 0 and all 35 years of age and over the point value 1.

**Marital status.** People who were married showed much better results of treatment than unmarried or formerly married people. Those living in non-regularized cohabitation of a conjugal nature were reckoned as married. Single (unmarried, separated, divorced or widower (widow)) have therefore received the value 0, married (including non-regularized) the value 1.

**Housing.** It was originally intended to dichotomize on this point, so that a self-contained flat received 1 point, and single room or more inferior accommodation, 0 point. However, the material showed such a close association between married status and self-contained flat, that the use of one of these criteria was completely satisfactory to predict success. On the other hand, it turned out to be significant for the prediction of failure when a minus was given for "subnormal" housing accommodation, i. e., for accommodation in a shelter or dose-house, or something even more inferior (perhaps quite without accommodation).

Persons with a flat or a room, therefore, were given the point value 1, and all those living in a shelter or other sub-normal accommodation were given the point value 0.

**Employment.** In the investigation, all those employed on the date of attendance (irrespective of the nature or permanence of the work) received point value 1, all without work received point value 0.

**Nature of the drinking.** The fact that a man drinks methylated spirits of other strange things (e. g., paraffin (kerosin), hair-lotion, anti-freeze or whatever else he can think of) is significant for predicting failure. All "meths-drinkers" and the like received the point value 0, all others the value 1. (It should be noted that with regard to drinking, it would have been desirable to have taken the extent and duration of the alcoholism into consideration as a factor in the prognosis. However, this was impossible because systematic

Table 1.

*Patients at the Antabuse Center in Aalborg distributed according to results of the treatment, with respect to each of the 6 social factors.*

	Results of the treatment				Relative figures			
	A	B	C	Total	A	B	C	Total
	Number of patients							
<i>Age.</i>								
0-34 years .....	62	29	58	149	41.6	19.5	38.9	100.0
35 and over .....	106	29	50	185	57.3	15.7	27.00	100.0
<i>Marital status.</i>								
Unmarried, previously married	38	21	49	108	35.2	19.4	45.4	100.0
Married .....	130	37	59	226	57.5	16.4	26.1	100.0
<i>Accommodation.</i>								
Shelter or the like .....	3	3	14	20	15.0	15.0	70.0	100.0
With accommodation .....	165	55	94	314	52.6	17.5	29.9	100.0
<i>Work.</i>								
Without work .....	57	28	73	158	36.1	17.7	46.2	100.0
In work .....	111	30	35	176	63.1	17.0	19.9	100.0
<i>Drinking habits.</i>								
"Meths" .....	8	5	19	32	25.0	15.6	59.4	100.0
Simple alcoholics .....	160	53	89	302	52.9	17.6	29.5	100.0
<i>Initiative.</i>								
Public .....	15	12	30	57	26.3	21.1	52.6	100.0
Private .....	153	46	78	277	55.2	16.6	28.2	100.0
In all ....	168	58	108	334	50.3	17.4	32.3	100.0

records were lacking. Therefore, all patients, apart from the "meths-drinkers", were considered as being in one group, "alcoholics").

*Initiative for the attendance.* The investigation showed that in those cases where the motivation for attendance at the clinic had come from the patient himself, his family, physician, hospital or employer, the result was better than when it was the public assistance office, prison administration, court, police or officers of the welfare board that had urged treatment as an alternative to other intervention.

The explanation must presumably be that this classification — though far from always appropriate — is a criterion of the degree of voluntariness and will to cooperate which the patient shows on entering into treatment. The patients in the first category, those referred privately, have therefore received the point value 1, while the others, those referred publicly, have received the value 0.

The following table shows the distribution of the patients in each of the 6 categories, according to the results of the treatment.

A prediction index was then calculated for each patient on the basis of the information available, each of the 6 social factors contributing either the value 0 or 1 to the index, depending on the evaluation given for the respective factor.

The patients thus fall into 7 groups with point totals from 6 (for positive in all factors) to 0.

The chance of good results in the case of patients with the highest possible points total should thus lie around 74 per cent (between approx. 64 and 84 per cent)4), and for definite improvement

around 88 per cent (between 81 and 95 per cent)4). Thereafter, the chance of good results falls through out all the stages of the points total, until for the last three groups together it is about 10 per cent (between 2 and 26 per cent)4).

As the magnitude of the B-group (the doubtful results) shows no definite tendency, the total chance of cure or at least improvement also falls with the points total, from around 88 per cent to around 27 per cent (between 7 and 47 per cent)4).

Table 2.

*Results of treatment in relation to the points values.*

Points total	Number of patients				Relative figures			
	A	B	C	Total	A %	B %	C %	Total %
6	60	11	10	81	74	14	12	100
5	56	19	29	104	54	18	28	100
4	32	13	24	69	46	19	35	100
3	17	10	23	50	34	20	46	100
2	3	2	15	20	10	17	73	100
1	—	3	5	8	}			
0	—	—	2	2				
	168	58	108	334	51	17	32	100

Conversely, the probability of total failure naturally rises from around 12 per cent for a points sum of 6 to around 73 per cent for the 3 lowest points groups together.

The clearest fall in the probability of cure is between 6 points, where "everything is in order", to 5 points, where a single one of the minus factors mentioned is present, and between 3 points and 2 points. (As to this last fall, it might be said that here is the transition from a difficult to an almost hopeless situation).

As far as the *positive* anomalies are concerned, those cases which have done well in spite of expectation, a closer analysis showed that it was not only the value of the 6 participating factors at the moment treatment started that was significant for the result, but also the way they developed during the period just after the commencement of treatment. The material has been so comprehensive with regard to the marital and employment questions, that it has been possible to go further into these topics. As the clinic worked with employment exchange and personal counselling as therapeutic aids, the actual carrying into effect of treatment meant in itself that the patients often found their marital and working conditions improved.

Table 3.  
*Clientele distributed according to changes in the marital and working circumstances following on the carrying into effect of treatment, and according to the results of the treatment.*

	Number of patients			
	A	B	C	Total
I. Married and employed at the commencement of treatment . .	90	24	24	138
II. Unmarried and/or unemployed at the commencement of treatment . . . . .	78	34	84	196
a) Number of these moving up from II to I immediately after the carrying into effect of treatment . . . . .	25	6	4	35
b) Those remaining in II . . . .	53	28	80	161

The table shows that the circumstances were improved for 35 patients in all, in that 23 who were unemployed but married at the date of attendance found employment at or immediately after the commencement of treatment, 4 persons who had employment but whose marital affairs were in disorder resumed marital relations, and 9 persons found both work and had their marital affairs put in order on the carrying into effect of treatment (or very shortly after).

The results for the 35 in all who moved up, correspond to the distribution of the results for those whose circumstances were in order from the start, and are considerable more favourable than for those who remained, and whose affairs in one or both of these circumstances were in disorder during the treatment.

Thus, a treatment prognosis made on the basis of social circumstances will often change shortly after commencing attendance, because in many cases the actual carrying into effect of treatment affects the social circumstances in a favourable direction.

It may be added that, for 22 persons in all, who lacked both employment and marriage partner on the commencement of treatment, but who gained either work (17) or resumed marital life (5 cases), the distribution according to results is considerably worse than in the case of those

who were able to put both these circumstances in order. Only in the case of 5 of these 22, who lacked two factors and obtained one of them, have the results fallen into group A, good results, while 7 have fallen into group B, doubtful results,

From this one may perhaps draw the conclusion that when several factors are disturbed at the commencement of treatment, it is of little benefit should one of them be put in order; the whole level must be raised in order to improve the prognosis to any considerable extent.

As far as the *negative* anomalies are concerned, where the results have been bad in spite of high points for the social factors, the personality deviations have turned out to be of significance for these results. As there was no doctor trained in psychiatry attached to the clinic, the clientele received no real psychiatric diagnosis, but where certificates as to state of mind or any other documents happened to have been available, or observations made by the staff during treatment have indicated that the patient in question was particularly conspicuous from a psychiatric viewpoint, this unscientific, but nevertheless presumably significant diagnosis was used as a basis. Sixty-eight persons in all were found in this sense to show personality deviations. The results for these 68 patients are considerably worse than for the clientele as a whole.

The personality deviation clients made a poorer showing in all points groups than the normal clients. The difference is least for the very lowest (2-0 points) group. In this group the results for those suffering from mental burden can hardly be poorer than they are for the "normal".

The results show that a psychiatric characterization is of considerable significance for predicting the recovery possibilities, by means of ambulant treatment of the type described, for those harmed by alcohol, and that the possibilities of successful prediction on the basis of social factors are limited by the significance of the personality deviations for the development.

The above conclusions have been subjected to control by means of a patient material from the clinic of the Danish Temperance Societies, in Copenhagen. It must be regretted, however, that the treatments at the two clinics appeared to be different, and also that the environment in which the two clinics worked varied so much from the one to the other as to inevitably influence the results.

Compared with the Copenhagen clinic, the clinic in Aalborg — for one thing because of the smaller size of the city — has the best possibilities for supervising that the Antabuse is taken regularly and to trace any patient trying to evade treatment. Further, the clinic in Copenhagen is characterized by a very large number of "semi-transients", of whom it is difficult to judge whether they can be said to be "treated". In the case of some individual patients at the clinic in

Table 4.

The distribution for "normal" and "personality deviation" clients, according to points and results.

Points	All clients			Personality deviation clients with			Normal clients		
	A	B+C	Total	A	B+C	Total	A	B+C	Total
6	54	16	70	6	5	11	60	21	81
5	52	38	90	4	10	14	56	48	104
4	28	25	53	4	12	16	32	37	69
3	15	22	37	2	11	13	17	33	40
2-0	2	14	16	1	13	14	3	27	30
In all	151	115	266	17	51	68	168	166	324

Copenhagen, however, a long-term and apparently very thorough social-psychiatric treatment has in fact been carried through.

With respect to the individual factors, some difficulty has also been caused by the Copenhagen material, as in general it has not been expressly made clear in the various cases whether the patients in question were employed on the day of attendance or not. All patients whose cases did not indicate whether they were employed on the day of attendance or not were therefore recorded as being in work. It cannot be denied that thereby a number of the patients can have been given one point more for this important factor than they should actually have had. On the whole, it had to be anticipated therefore, that the results from the Copenhagen clinic would more poor than those from Aalborg. The total number of cases from the Copenhagen clinic amounted to 191.

As expected, the results for the Copenhagen clinic were poorer than for the Aalborg clinic. This is not due to the fact that the Copenhagen material is worse than the Aalborg material measured in points values. Thus, the average points value in Copenhagen was 4.56 against 4.43 in Aalborg.

In spite of all differences, however, it will be seen by comparing Table 2 (for Aalborg) and Table 5 (for Copenhagen) that in both materials the probability of cure is greatest for persons with the highest points, 6, and next greatest for persons with 5 points. Further, it appears that also in the Copenhagen material the distinction emerges quite clearly between those positive for all factors (6 points) and those negative in only one of the factors. It is also seen that per-

sons with 2 points or less have very poor chances of being cured at either clinic. However, the figures from both Aalborg and Copenhagen show that in spite of all, it is possible in a few isolated individuals, and against all expectations, to obtain good results by the ambulant treatment of even seriously socially degraded alcoholics. But a very energetic effort is required in this work, and on the whole this group is in general hardly suited to ambulant treatment.

## SUMMARY

An attempt to achieve a prediction of the cure results of the ambulant treatment of alcoholics by working up the cases from the Antabuse clinic in Aalborg and a subsequent checking of the calculations on the material from the clinic of the Danish Temperance Societies in Copenhagen, showed clearly from both materials that the chances of cure were undoubtedly greatest for patients with the highest positive value for the selected factors.

The investigation also showed, however, that the following circumstances exert at least some influence on the prognosis: Changes in a favourable direction in the factors mentioned when carrying the treatment into effect resulted in an improved prognosis, pronounced personality deviations, reduced the chances of cure, and the form of treatment, in particular the possibility of supervising that the patients carry through the cure is important. (The possibilities of supervision are, for their part, determined to some extent by external circumstances, for one thing the area and surveyability of that region within which the clinic operates).

Table 5.

191 patients from the clinic of the Danish Temperance Societies according to points total and results.

Points	A	B	C	Total	A	B	C	Total
					%	%	%	%
6	27	11	17	55	49	31	20	100
5	18	15	13	46	39	33	28	100
4	8	23	25	56	14	41	45	100
3	8	5	10	23	35	22	43	100
2	2	2	5	9				
1	—	—	1	1	18	18	64	100
0	—	—	1	1				
In all	63	56	72	191	33	29	38	100

## NOTES AND REFERENCES

- 1) With reference to further accounts of prediction studies, the methods used and the theoretical and practical problems involved, see *Paul Horst et al.: The Prediction of Personal Adjustment, Social Science Research Council, New York 1941.*
- 2) *Jacobsen, M.: Dan. Med. Bull. 1956, 3: 165.*
- 3) By "association" in the present account is understood an association found significant on the 5 per cent or lower, by statistical tests.
- 4) 95 per cent confidence limits calculated from *A. Hald: Statistical Methods, Tables and Formulae, Copenhagen 1958, Table XI, p. 54.*



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